

CALIFORNIA STATE BOARD OF HEALTH

MONTHLY BULLETIN

Vol. 11

OCTOBER, 1915

No. 4

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MONTHLY BULLETIN

CALIFORNIA STATE BOARD OF HEALTH

Devoted to the Prevention of Sickness and Death

¶ Entered as second-class matter, August 15, 1905, at the post office at Sacramento, California, under the Act of Congress of July 16, 1894.

Sent free, on request, to all citizens of California

WILBUR A. SAWYER, M.D., Secretary and Executive Officer . . . Editor

GUY P. JONES, Morbidity Statistician . . . Associate Editor

Miss Tate to Head Tuberculosis Bureau. The Bureau of Tuberculosis, under the directorship of Miss Edith L. M. Tate, who has just been appointed to the position, is undergoing a process of reorganization. The field is immense and Miss Tate is particularly well qualified for directing the affairs of the Bureau. For years she was State Organizer for the Wisconsin Anti-Tuberculosis Association, performing all work pertaining to organization, supervising the work of visiting nurses, etc. She has also held a special position with the Wisconsin State Board of Control, managing county tuberculosis sanatoria and conducting a social service department at the State sanatoria for tuberculosis.

Miss Tate has given fresh impetus to the work in California. As Executive Secretary of the State Society for the Study and Prevention of Tuberculosis during the past year she has had an insight into conditions as they exist in California. Already, a number of the authorities of different counties have signified their willingness to raise the standards of county tuberculosis hospitals, in order that they may receive the subsidy granted by the State under the new law.

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Diminish Typhoid Fever in California. On another page is found a plan for reducing the typhoid fever death rate in California from 13.6 to 9.6 per 100,000 population. The State Board of Health is determined to accomplish these results, and thereby to prevent 3,000 cases of typhoid fever. Watch the accomplishment from year to year!

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Small Incomes Do Not Provide Tuberculosis Care. If you stop to ask what ought to become of the 75 per cent of patients who die from tuberculosis in this State, whose incomes are \$1,000 or less, you may get a new angle on the tuberculosis problem. An income of \$1,000 or less, does not mean a white capped nurse and a private room in a hospital. If you analyze a little more and find that 47 per cent of the number who die from tuberculosis are married, and

that 27 per cent of the orphans cared for by the State are children whose fathers or mothers, and not infrequently both, have died from tuberculosis, the necessity for proper care and treatment in the county hospitals seems very apparent. Where can a patient, whose income is less than \$1,000 a year, go for hospital care? Where can the community, to protect itself, send such a patient? Where can 47 per cent of those patients, who have families and want to be near them, and at the same time receive care and treatment, go? In all of California there are 860 beds in county hospitals. For a State in which there are more than 5,000 deaths from tuberculosis annually, it looks as if a good many patients may not receive hospital care.

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The Value of a Day in School. "Every day spent in school pays the child nine dollars;" the United States Bureau of Education has the facts and figures to prove it at the Panama-Pacific Exposition. Going to school certainly pays, provided it does not cost health. If it is a clean, healthy school, its children have a good chance of collecting their nine dollars a day. If it is a school with a polluted drinking well, or a school from which other children with contagious diseases are not excluded, they run the risk of paying the nine dollars and more in fines—preventable diseases, lowered vitality, present suffering and impaired future earning power. Let the child have the nine dollars without a rebate due to unnecessary diseases. Demand for every school a safe water supply, sanitary toilets, hygienic schoolrooms, and efficient medical inspection.

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Warning! The new State law requiring that births be registered
Register within thirty-six hours is not being followed in all cases.
All Births. Forgetfulness is no excuse. The lack of a worthy name for an important new arrival need not interfere, since provision is made for supplementary registration of the name. So as to detect unreported births, death records of infants are being compared with the corresponding birth records. Where a discrepancy exists, an effort is made by the State Board of Health to fix the responsibility for the neglect to register the birth.

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Tuberculosis Hits Hard When It Hits Home. The other day a woman passing one of the tuberculosis clinics in the State stepped in on a matter of business. She casually mentioned that she did not come in contact with people suffering from tuberculosis, and had no interest in the clinic. Just then the door from the examination room opened. The doctor was giving a patient some instructions. She waited, and heard: "Do you think I'll have to give up all my washing, doctor?" The visitor who was not interested in tuberculosis was inside the examination room in an instant. It was her laundress. The finery that made her fresh as a May morning had been ironed by the patient. This was the woman who on certain days was a member of *her* family. Some day, and it is not a long way off, we shall want to know where everybody Lives and Works.

Advantages of Birth Registration. You owe it to your child to see that his birth is registered. Some time he may need an official record to prove his American citizenship or his age, or to make him eligible for an inheritance. Requests have been made to this office for birth records by persons about to be married in foreign countries where a definite record of a birth is a prerequisite to the authorization of the marriage.

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The Passing of the Pest House. The old style country pest house is disappearing and the fully equipped urban isolation hospital is taking its place. The term "pest house" suggests neglect and also extreme isolation, based upon the old mistaken idea that our common contagious diseases fly in a mysterious way for long distances through the air. Let us have our isolation hospitals modern and conveniently situated. Above all, in referring to them, let us drop the slanderous appellation, "pest house."

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The Common Glass at the Soda Fountain. The process of "cleaning" drinking glasses at the soda fountain is indeed marvelous. Too often the glass is dipped into a small tub of dirty water, to remove the dregs, and is then either refilled or polished and set aside. The customer in the meanwhile is serenely contemplating white fixtures and polished mirrors—symbols of cleanliness. The common drinking cup, with a chance to rinse it in running water, was much safer than the glasses at some soda fountains. If it is impractical to wash soda fountain glasses in *hot* water and soap between customers, may the public soon demand individual paper containers, just as they now require individual straws.

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Adequately Trained Nurses Prevent Typhoid Fever. A large proportion of the cases of typhoid fever are infected within the households of previous cases. Picture the tired mother nursing the sick, cooking for the family, and caring for the children. Even if she had the knowledge necessary to prevent secondary cases, fatigue would tend to produce a diminution in the precautions. A trained nurse is invaluable in cases of typhoid fever. She is able to save many lives by preventing infection if the training school from which she graduated had high standards and gave adequate instruction in preventive medicine.

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States Endorse the Establishment of a Federal Leprosarium. Letters have already been received by the State Board of Health from the governors or boards of health of sixteen states endorsing the movement to establish a federal leprosarium. No communications unfavorable to the movement have come to hand. The following excerpts from letters from state boards of health are representative of the general sentiment:

"In view of the recent experiences with cases of leprosy in this state and recognizing the fact that difficulties which have confronted the California health authorities in handling cases of this

Original

disease are common to practically every state in the Union, this board heartily concurs in the recommendations set forth in the resolutions adopted by the California State Board of Health and will lend whatever influence it can to bring about the establishment of a national leprosarium. In the opinion of this board the establishment of such an institution is an urgent need and is the only practical solution of a vexatious problem now confronting a number of our northern states, including ———."

"We have no leprosy problem at the present moment. We have encountered the problem of a single leper. We have, on three occasions, had to handle the disease. Each time, there has been only one patient, and no proper means of isolation. We are heartily in favor of a federal leprosarium."

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Rural Nursing in California

Well Under Way.

The Dohrmann Memorial Fund, providing for rural nursing in Northern California, is being expended under the direction of the California Association for the Study and Prevention of Tuberculosis. A visiting nurse of experience, Miss Eloise Thornton, has been engaged to preach the gospel of fresh air and sunshine. She is also preaching against the use of the patent medicine bottle, which too often is found upon the clock shelf of the rural home. The donor of this fund desired that cases of tuberculosis in rural communities be found and given instructions which may lead to recovery. Unfortunately the fund for this most commendable work is about exhausted.

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A Message to Fathers. During the Pittsburgh (Pa.) Baby Week a leaflet on the care of babies was distributed as a message to FATHERS!

It demonstrated that mothers must have the understanding co-operation of fathers if the children are to be reared under the best hygienic conditions. The father, moreover, is largely responsible for making his city a healthy place for his babies—and those of other people. It depends largely on him whether clean milk is available and the health department is efficient and properly supported.

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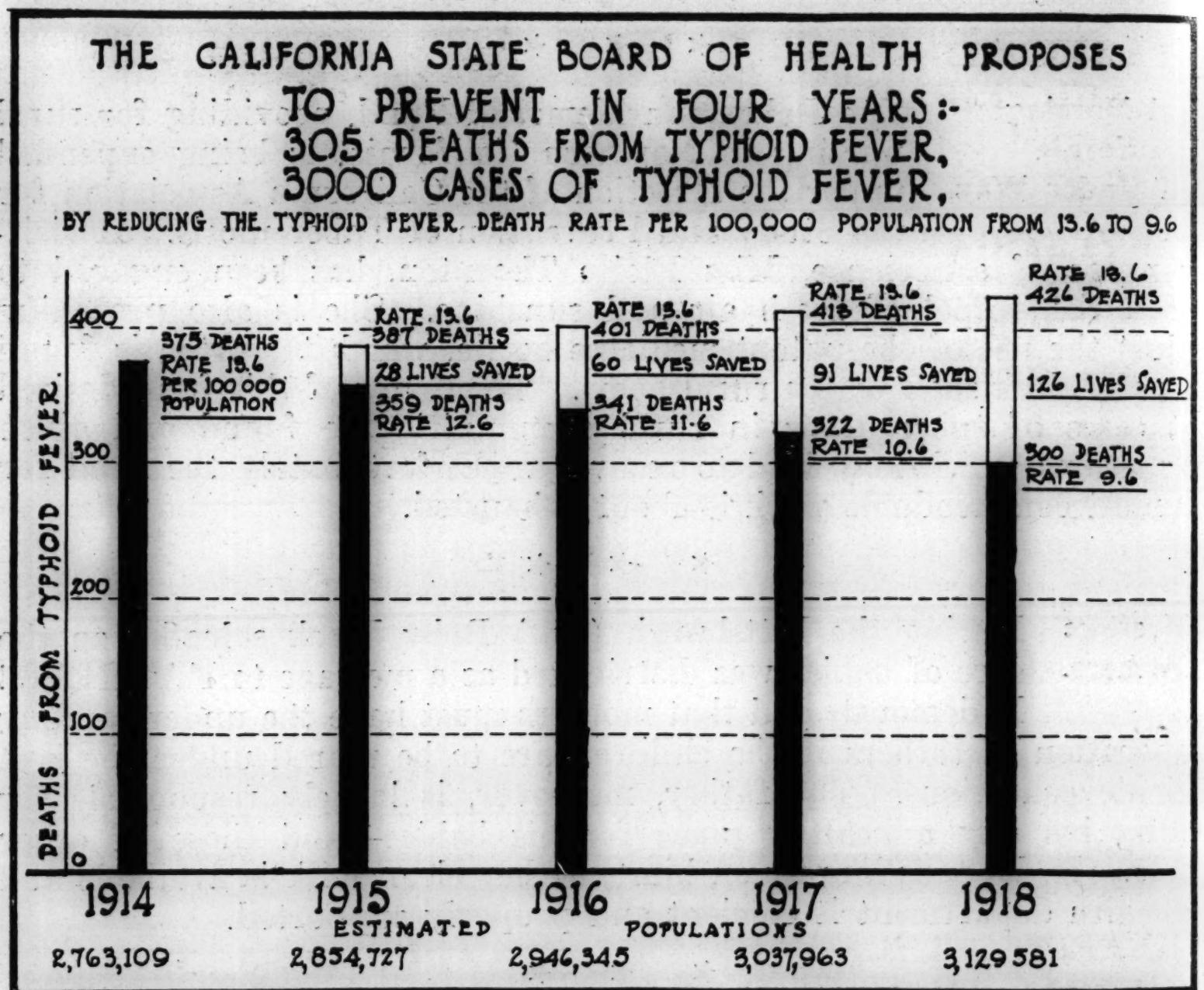
Community Health

Departments.

Small communities in different parts of the United States are combining in groups to maintain efficient consolidated health departments in place of the small, weak departments which they were able to maintain separately. In this issue Mr. B. D. Marx Greene, City Attorney of Antioch and Pittsburg, points out the waste of funds and loss of efficiency in our present system, owing to duplication and overlapping of work and absence of adequately paid experts. An attractive monthly bulletin is coming to the State Board of Health bearing the following heading: "Our Communal Health. Published Monthly by the Consolidated Board of Health of Wilmington and New Hanover County, North Carolina. From the North East River to Federal Point, and from the Cape Fear to the Sea—City, Suburb, Village, and Farm—we are one people, striving for healthful and useful living."

2—19655

Defective



To Prevent Typhoid Fever

The California State Board of Health hereby declares its intention to reduce the typhoid fever death rate from 13.6 to 9.6 per 100,000 population in the four years from 1915 to 1918, inclusive. This reduction in the death rate from typhoid fever will mean the saving of 305 lives and the prevention of at least 3,000 cases.

The State Board of Health proposes to bring about this decrease in typhoid fever by—

PREVENTING THE SEWAGE POLLUTION OF PUBLIC AND PRIVATE WATER SUPPLIES. This work is being carried on by the newly established Bureau of Sanitary Engineering.

INVESTIGATING OUTBREAKS OF TYPHOID FEVER AND DETERMINING AND REMOVING THEIR SOURCES. The investigations will be made by experts in the Bureau of the Hygienic Laboratory.

MANUFACTURING TYPHOID VACCINE AND DISTRIBUTING IT FREE TO PHYSICIANS, in order to encourage the immunization of large numbers of persons, especially those in unusual danger of infection. This work is being performed at the State Hygienic Laboratory.

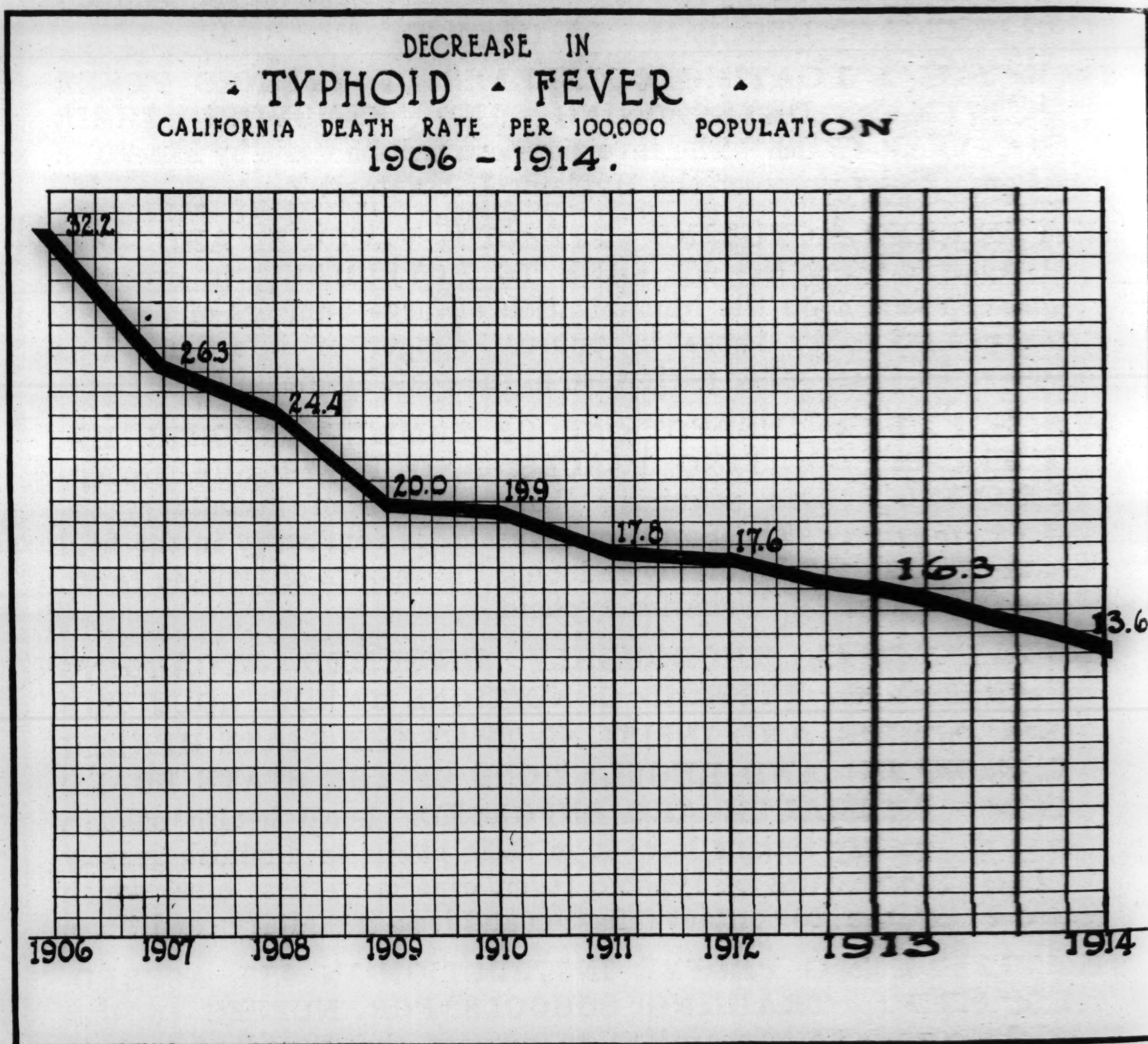
MAKING INSPECTIONS OF SUMMER RESORTS, HOTELS, EATING PLACES, AND THEIR SURROUNDINGS, and requiring the correction of insanitary conditions. The Sanitary Inspector is constantly in the field and is undoubtedly reducing the amount of typhoid fever, especially "vacation typhoid."

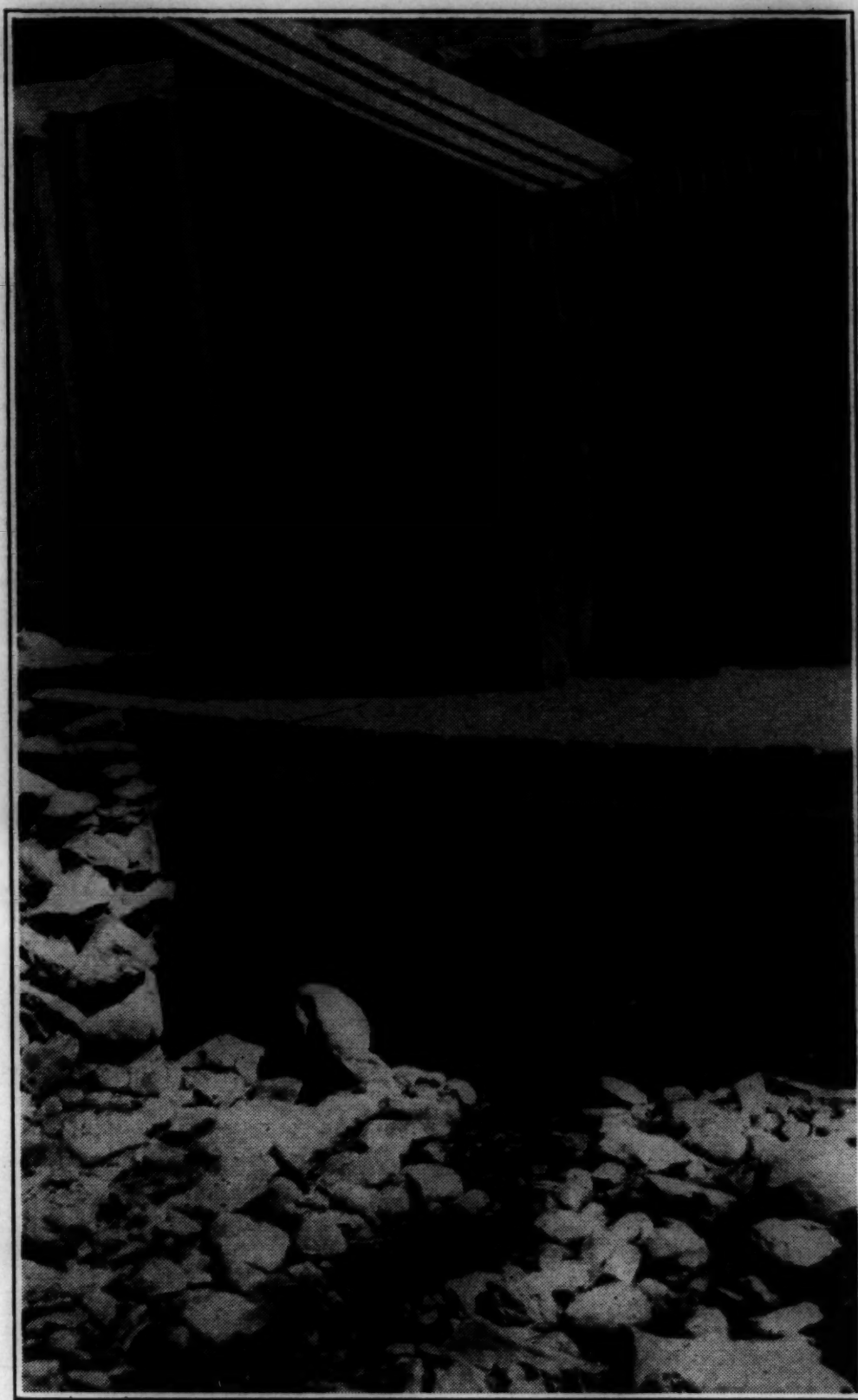
KEEPING THOROUGHLY INFORMED REGARDING LOCAL TYPHOID CONDITIONS THROUGHOUT THE STATE AND INSISTING THAT THE STATE HEALTH LAWS AND REGULATIONS OF THE STATE BOARD OF HEALTH ARE ENFORCED. Local health officials and physicians have it in their power to diminish greatly the amount of typhoid fever, especially those cases which are due to contact infection and local insanitary conditions.

INSURING PROPER INSTRUCTION IN ALL ACCREDITED TRAINING SCHOOLS FOR NURSES so that adequate precautions to prevent the spread of typhoid fever will be observed at the bedside. The Bureau of Registration of Nurses will see that the standards are kept high.

The death rate from typhoid fever has been reduced from 32.2 to 13.6 per 100,000 population in the past eight years and much suffering and many deaths have been prevented. In 1913 California had a typhoid death rate of 16.3 and stood, in rank, in the middle of the list of twenty-four registration states, there being twelve with worse records, and eleven with better. The average rate for twenty-four states was 19.3.

Only five states had a rate below 10.0 and these were Vermont (7.8), Massachusetts (7.9), Rhode Island (8.3), Wisconsin (9.0), and New Jersey (9.6). California can, and will, join this roll of honor.





**THE CALIFORNIA STATE BOARD OF HEALTH SAYS THAT THIS
MUST STOP.**

This privy is in a mountain town, lying in the heart of a popular vacation country. As shown in the picture, it is placed directly over a small stream.

Sewage in this stream is carried to a larger stream, upon the banks of which are summer resorts and camping places.

Many typhoid convalescents go to the mountains for recuperation. Typhoid bacilli are frequently present in their excrement.

By the time the sewage from the small stream reaches the larger stream, it becomes so thoroughly mixed that its presence is not distinguishable.

The water in the larger stream is clear, cool and sparkling. It looks good, smells good and tastes good. Vacationists drink it, little knowing what it may contain. Upon returning from their vacations they develop typhoid fever.

The California State Board of Health, through its Sanitary Inspector, is discovering many places like the one pictured. Each one found, is immediately abolished.

**STREAM POLLUTION IS A MISDEMEANOR, PUNISHABLE BY
LAW. DO NOT DRINK FROM STREAMS WHOSE PURITY MAY
BE IN DOUBT.**

TYPHOID CARRIERS.

By GUY P. JONES, Associate Editor.

During the past few years the history of typhoid fever in California has been enlivened by the discovery of two chronic typhoid carriers, Mrs. X at Hanford, and H. O., "a typhoid carrier on shipboard." The latter has become almost as well known as the celebrated "Typhoid Mary" in New York City, who was discovered in 1907 and who is still a bacillus carrier. For the benefit of those who are unfamiliar with the histories of these carriers they will be briefly reviewed here.

H. O. was a member of the crew of a lumber steamer plying between Pacific coast ports. So many cases of typhoid fever occurred among members of the crew that it became known as "the fever ship," making it almost impossible to secure labor. The owners had the vessel overhauled, and made every effort to improve sanitary conditions, but cases of typhoid still occurred among the men. The San Francisco Health Department investigated and secured evidence tending to show that a member of the crew was a carrier. The matter was referred to Dr. W. A. Sawyer, Secretary of the California State Board of Health, then Director of the State Hygienic Laboratory, for investigation. As a result, it was determined that H. O. was a chronic carrier. Other members of the crew became infected, probably through drinking water from a cask into which H. O. dipped his hands while filling a drinking cup, thereby contaminating the water.

Twenty-seven cases of typhoid with four deaths, among members of the crew occurred while H. O. was employed upon the vessel. In fact, a large proportion of the typhoid cases cared for in the Marine Hospital in San Francisco during a period of three years were in members of this vessel's crew. H. O. was immediately isolated, but after some time was released on parole. Three cases of typhoid, one resulting fatally, occurred upon the vessel of whose crew he became a member. He was again isolated and apparently he must remain so indefinitely as he bids fair to remain a chronic carrier, in spite of anything that may be done for him.

Nearly One Hundred Cases Due to a Carrier.

Following a church dinner in Hanford, ninety-three cases of typhoid fever developed in persons who attended. Doctor Sawyer made a detailed investigation, involving an immense amount of labor. Food supplies, water and every possible vehicle of infection were investigated, each in turn being ruled out. Upon making an examination of persons engaged in preparing the dinner, it was found that Mrs. X was probably a carrier. Four cases of typhoid fever had occurred in her boarding house during the seven years preceding, yet Mrs. X had never had typhoid and did not suspect that she was a carrier.

Mrs. X is now under the observation of the California State Board of Health, and is bound by an agreement not to assist in the handling or preparation of any food products.

"Typhoid Mary" was a cook to whom, in 1907, twenty-five cases of typhoid fever, in the homes of those where she had worked, were directly traced. She was placed in detention, but was released in 1910 upon promising not to engage in cooking. She broke her parole, however, and became a cook in a private sanitarium. Two cases of typhoid fever developed in the institution. Later twenty-five cases of the disease appeared among physicians and nurses in a large New York hospital. An investigation revealed the presence of the famous carrier working as cook under an assumed name, and she was placed in detention, where she will be kept as long as she is a menace to the public health.

One of the important measures in the control of typhoid fever is the early detention and management of carriers. Careful investigations of outbreaks by public health experts, in order that such carriers may be discovered, are necessary in the control of the disease. In order to prevent pollution of water supplies and for the protection of foods, it is essential that carriers be controlled, so that the distribution of typhoid infection may be stopped. A single carrier may be the cause of many cases. One hundred and twenty-seven cases of typhoid, with nine deaths, were traced to these two carriers in California.

Fever Cases, Fever Carriers.

Since about four per cent of all persons contracting typhoid fever become carriers, it is probable that there are created in California each year at least one hundred such distributors of infection. We do not know how many of them receive their infection through drinking polluted water, but it is probable that many become infected through this medium. Nor do we know how many persons are being infected through contact with these carriers. It must be relatively small in comparison with the numbers infected through the use of polluted water, drinking of contaminated milk, contact with previous cases, and other common ways in which the typhoid bacillus gains access to the human stomach.

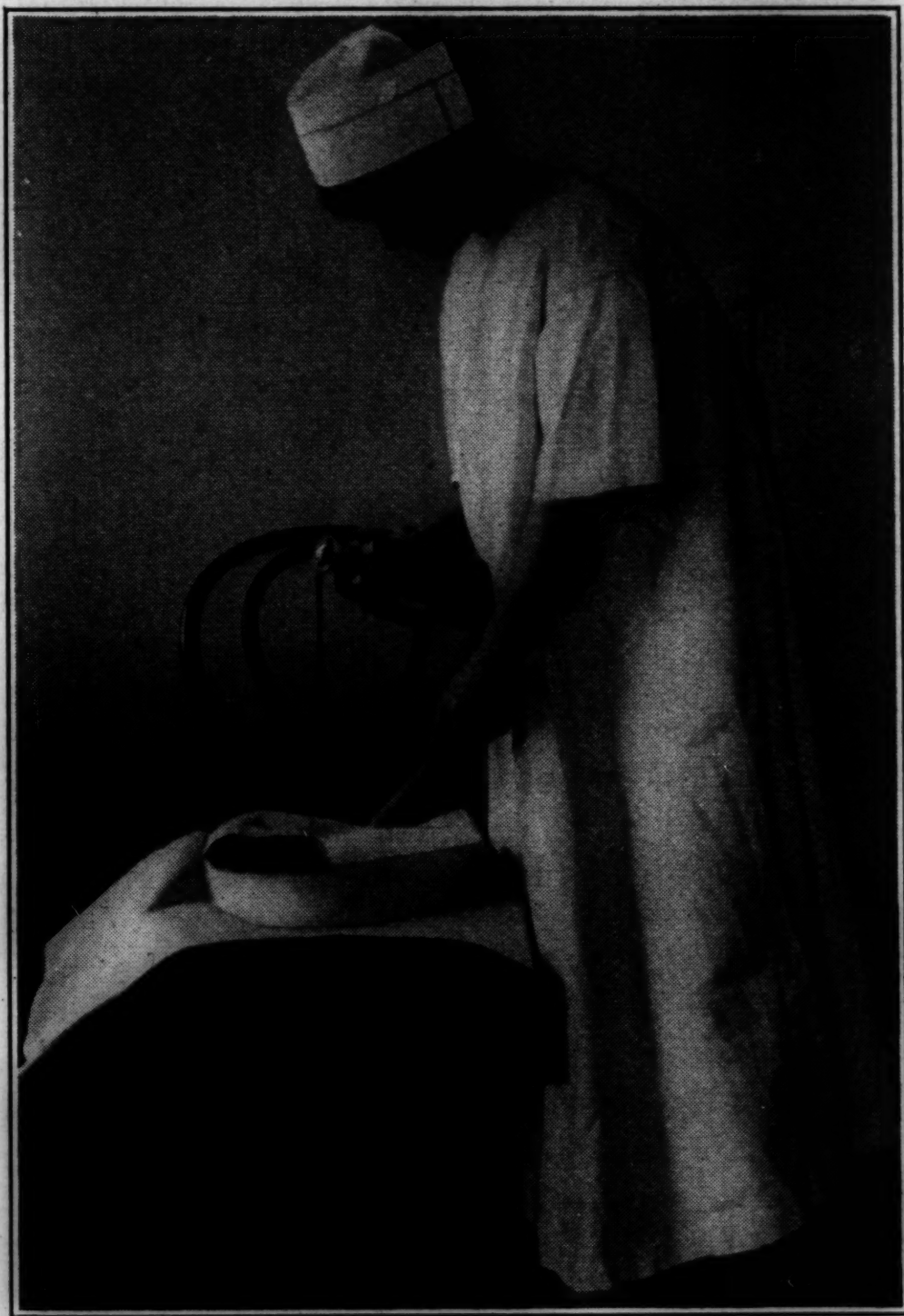
It is obvious then, that by shutting off the channels of infection through which carriers become infected, their numbers can be greatly reduced. The fewer cases of typhoid fever that we have, the fewer carriers will develop. If there shall be but fifteen hundred cases of typhoid fever in California this year, the number of carriers created will be correspondingly reduced—probably to as few as fifty or sixty. If there are fewer carriers, there will be fewer cases contracted through contact with carriers. The discovery and control of carriers, applied vigorously, in connection with the more important prevention of stream pollution and the like, will in time be the means of erasing the disease from our records.

TYPHOID FEVER IN THE HOME.

By ANNA C. JAMMÉ, R.N., Director Bureau of Registration of Nurses.

Typhoid fever is frequently contracted in taking care of a typhoid patient. The danger in communicating the disease lies in the handling of the patient, his clothing, excreta, and dishes, without afterward washing and disinfecting the hands before touching food materials and dishes used by the family.

Nursing is the most important factor in the care of the patient and should be done by one who understands and appreciates the danger of



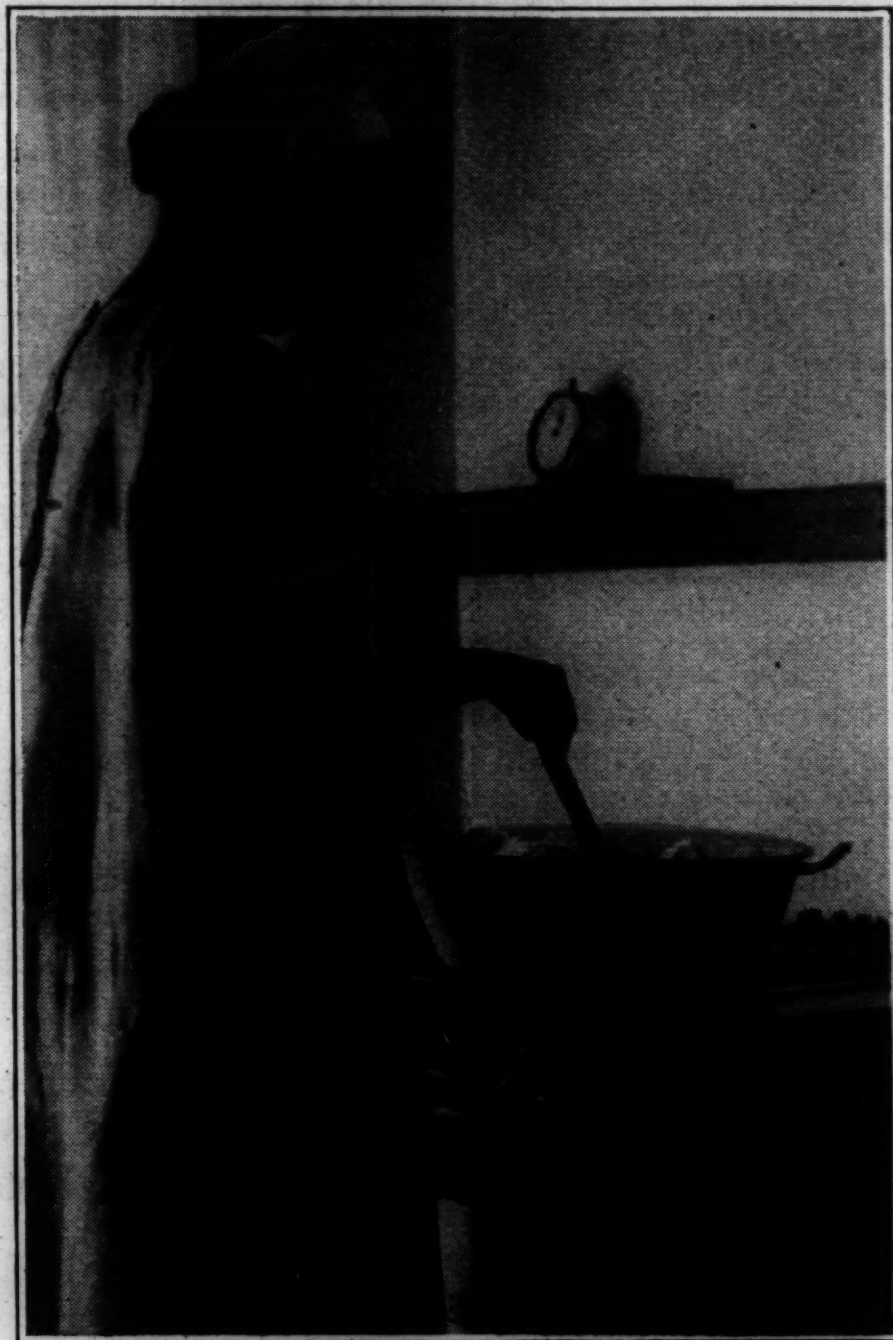
By mixing a disinfectant with the excreta of a typhoid patient the nurse provides a barrier against the spread of typhoid fever.

communicating the disease, preferably by a trained nurse. When it is possible, the continuous services of such a nurse should be employed. If this is not possible a visiting nurse can be notified, who will make daily visits to bathe the patient and instruct the family in his care. Visiting nurses known as Public Health Nurses are to be found now in practically every city where public health work is carried on. These nurses are on salary and patients are visited without charge.

If precautions relating to the disinfection of clothing, dishes, excreta and the nurse's hands are strictly observed, the danger to other members of the family will be lessened.

All clothing coming in contact with the patient must be thoroughly boiled as soon as removed. The water must be kept boiling and clothes stirred, so that every part is boiled. They should then be hung up in the air to dry.

The dishes used by the patient must be thoroughly boiled or kept isolated for the use of the patient only.



Typhoid fever is spread by the contaminated bed clothes of a typhoid fever patient. To prevent the infection of others, bed clothes must be thoroughly boiled as soon as removed.

The stools and urine must be disinfected with either crude carbolic acid or phenol, 5 per cent, or 10 per cent formalin, or a concentrated solution of chloride of lime. An equal quantity of the solution should be used and thoroughly mixed with the material to be disinfected in order that every part may come in contact with the solution. The mixture should be allowed to stand covered for one hour before it is poured into the water-closet.

After handling the patient, the nurse's hands must be thoroughly washed with soap and water and soaked in a disinfecting solution for two minutes.

Rule 3, of "The regulations of the California State Board of Health, for the prevention of typhoid fever" dealing with instructions to the household is as follows:

Rule 3. Instructions to Household.

It shall be the duty of the physician in attendance on a person having typhoid fever, or suspected of having typhoid fever, to instruct the members of the household in precautionary measures for preventing the spread of typhoid fever.

NOTE.—The following instructions are required by Rule 3:

(1) If the patient is not removed at once to a hospital, he shall have a separate bed in a room screened against flies.

(2) Unnecessary visitors shall be excluded from the sick room.

(3) The person having the care of the patient shall wear a washable outer garment, and shall thoroughly wash the hands with soap and water after handling the patient, or any object which he may have contaminated.

(4) The feces, urine, and other discharges from the patient shall be immediately disinfected. The following methods are recommended:

(a) *Disinfection by heat.* Pour about a quart of hot water into the receptacle containing the excreta and then a heaping cupful of quicklime (calcium oxide). Cover the receptacle and allow it to stand for two hours. Sufficient heat will be generated to kill the typhoid organism.

(b) *Chemical disinfection.* Mix with equal quantities of either 5 per cent phenol solution or 10 per cent formalin solution, thoroughly breaking up the masses, cover, and allow to stand at least one hour.

(5) Objects which may have been contaminated by the patient, shall be disinfected before being removed to any place where they may become possible sources of infection.

(a) Clothing and bedding should be boiled in water, or soaked for one hour in 5 per cent phenol solution or 10 per cent formalin solution before being sent to the laundry.

(b) Dishes and other utensils should be boiled in water or soaked for one hour in 5 per cent solution of phenol or 10 per cent solution of formalin.

(c) Remnants of food should be burned or, if liquid, disinfected, as provided for discharges.

These regulations together with other information are contained in Special Bulletin No. 6, issued by the State Board of Health, and can be obtained without cost by applying to the office of the Board, Sacramento.

THE CAUSE OF TYPHOID FEVER IN THE SACRAMENTO VALLEY.*

By DR. C. A. POAGE, Health Officer, Colusa County.

By reference to the "typhoid" map in the April number of the Bulletin of the California State Board of Health, you will see that in a great portion of the Sacramento Valley, the San Joaquin Valley and a large portion of the interior of southern California, typhoid fever was prevalent to a much greater extent than in other areas of the State. The presence of typhoid fever to such a greater degree probably demands no apology from the local health officer, but certainly does merit the greatest diligence on the part of health officers representing these counties, and the representatives of the State.

I do not wish to imply by the title of this paper that the cause of typhoid fever is different in the Sacramento Valley than other sections,

*Read at the Annual Conference of State, County and Municipal Health Officials, held at Oakland, September 7-10, 1915.

but I do wish to make clear the determining factors or conditions that are present with us, representing the predisposing causes, with the idea of getting some general interest aroused, not only by the counties represented, but also, if feasible, to get the situation before the State Board of Health and possibly to get some concerted action by the State in the control of this seemingly hopeless problem as attempted by the individual counties whose health officers are on a nominal salary and can not give their time to its solution. Like the control of the flood waters of the Sacramento River, which is a state as well as a national problem, I believe this to be a state rather than a local question.

The area embraced is represented by the Sacramento Valley drainage area. In order to understand the pollution of water, it is necessary to get an idea of the contour of the area involved. The Sacramento River and its tributaries represent the sole water supply of the area in question, other than from direct rainfall. It also represents the sole drainage for the same area, as all waters, overflow and irrigation, find their way back into the river. By the constant overflow of the Sacramento River, from the earliest times known to man, the lands adjacent to the river, especially in the lower river sections, have been built up to a higher level than formerly. Consequently the lands near the river are much higher than the land farther away. Beyond this high land, varying from no width to several miles, is a lower strip, receiving the overflow from the river at high water and also the foothill water, several miles wide, and known as the "trough" on the west side, and a similar low strip or plane on the east side between the river and the Sierras, the lower portion of which is known as Butte Slough. During high water the river overflows through the natural sloughs, breaks and weirs, covering this large area of low land in the "trough" and Butte Slough, sometimes breaking into the various reclamation districts leveed against it. It will thus be seen that the Sacramento River for a few days at least overflows perhaps a third of the entire valley area.

River Highly Polluted Always.

The Sacramento River is at all times a highly polluted water. Repeated examinations of the water at Sacramento, I am informed, show this, and at Colusa, 70 miles north, I have for many years had occasion to have the water examined at various seasons and always with the same results. Regarding the polluted matter discharged into the river, Dr. Parkinson of the State Board of Health informs me that it can be assumed that every town within a few miles of the river that has sewage from more than one block of buildings is discharging same into the river, or if not directly into the river, then into the overflowed area which again finds its way back into the river lower down.

In addition to the flood area, a large portion of the higher area along the river is supplied by drinking water from the river, or the lands are irrigated by means of ditches diverted from the river. This river water, by means of seepage, pollutes many surface wells no doubt. The result is that all wells in the flooded area are covered and filled with water during high water time, and during summer this and other high land is supplied with irrigation from the same water. The population of these flood lands during the summer months as well as the

irrigated lands is very considerable, representing the large number of laborers used in the handling of the orchards, grain, rice, alfalfa, beans and corn. They would represent conservatively one-fourth of the inhabitants of the whole valley area. These people are largely, of course, of the laboring class, and consequently ignorant of protective health and sanitary measures. One-fourth of the inhabitants of the Sacramento Valley are drinking for a large part of the year, at least, highly polluted water. It has been said that only about one-tenth of all persons exposed to typhoid infection contract the disease. It seems only a wonder in the light of this knowledge then that we do not have greater devastations from typhoid than we have.

The following represents not an unusual example of a fall month of the year, say August, September or October, as taken from my case records of the past six weeks:

J. S., milker, Portuguese, 21, exposure, shallow well, open sink, drain 20 feet away. Examination of well shows pollution. Widal positive.

F. E., postal clerk, away at Shasta two weeks, exposure, contact at hospital or at Shasta. Widal positive.

E. N., 19, laborer on bridge near Arbuckle, well water in overflowed district. Widal positive.

M. A., 17, servant, Portuguese, contact with case above, J. S., or same well. Widal positive.

Mrs. S., 43, has had typhoid on place three or four years at this season. Drank from shallow well, surface water, though warned against it. Well water examination shows pollution. Widal positive.

M. E., 15, student, town water, but during hot days drank out of surface well, examination at State Laboratory shows pollution. Widal positive.

W. C., 12, student, swimming every day in river, drank ditch water. Widal negative. Probably paratyphoid.

J. L., 3, lives on river bank, well water only, shallow. Possibly polluted from river, but no other members have contracted fever as yet. Widal positive.

W. D., negro, 50, buggy washer, town water, filthy conditions at home, no source obtained. Died in six days; no positive Widal secured.

Of the above nine cases it will be seen that only one was drinking water that has been found safe, the city water. The remaining eight were drinking river water, ditch water from the river, surface well water in the flood area, surface well water near the river or water shown by examination to have been polluted.

Wells Are Also Polluted.

Of a dozen or more wells along the river, not in the flood area, all examined have been found polluted to a small extent. These are surface wells it is true, and in most cases with open casing at the top, or other surrounding conditions that rendered them unsafe; so we have not only the river water polluted, and the wells in the flooded district, but in a large measure the wells on the higher ground on or near the river banks. The Cooke's water works well at Colusa is thirty or forty feet from the river. During the high water the surface of the river is higher than the top of the well, which is hermetically sealed. This well is 60 or more feet deep, yet an examination by the State

Hygienic Laboratory shows slight contamination of this water. We can have no other conclusion in this instance other than that the seepage from the river passed sixty feet through the sediment soil to pollute this well. This being true, no well near the river can be regarded as safe, except a deep well which is cased its entire depth.

It seems to me that this situation opens up a very grave problem for sanitarians, which can perhaps only be handled by the assistance of the engineering department; and I trust there may be a way opened up whereby sufficient funds may be forthcoming to make a more thorough investigation as to the pollution of all surface waters, and some definite information be given out, not only with a view to solving the problem to a degree, but that the public may be warned as to threatened danger; for as it is, we have no available information to give out, except vague generalities.

Given then this constant condition of a general water pollution, in many cases unknown or unsuspected, we necessarily must have much typhoid fever in the Sacramento Valley drainage area. With cases more or less constantly present, we then have in addition to constant water pollution making the disease almost always endemic, (1) the carrier, who becomes more or less a constant menace, (2) the milk-borne epidemic, because the dairy industry represents a large number of people, people very careless sometimes in their habits, too, and (3) contacts, a constant menace where typhoid is ever endemic.

A Milk-borne Epidemic.

Dr. Sawyer has asked me to refer briefly to milk-borne epidemics in this paper. My knowledge is very limited, as is my experience, but recently the town of Colusa had some twenty cases of typhoid fever appear almost simultaneously on or about the 12th of May, most of whom were in children and all of whom were on one milk route. All used city water from the municipal plant, from a well 300 feet deep, well cased and new. Water had been turned into the city mains for ten minutes at the first of each month, from the old Cooke's water works above referred to, for the sake of keeping the well pumped out.

The situation seemed so serious that I appealed to Dr. Currie for assistance, and he kindly assigned Dr. Geiger to undertake the investigation of the cause of the outbreak. Dr. Geiger spent several days with me and went away armed with material for a lot of hard work. The results of the laboratory findings were that the well at the dairy where the bottles were rinsed with cold water showed slight pollution. A second examination of the Cooke well also showed slight pollution. As all the persons affected were on one dairy route and none on the other route, it seemed indicative that the trouble was probably due to the polluted well. As against this, the family had used this water continuously for years. Again, the second dairy used unboiled Sacramento River water to rinse the bottles and no cases have occurred on that route. So there seem many inconsistencies and we do not know what a day may bring forth in the typhoid situation. The great menace here is the outbreak of a case on a milk route, or a carrier who may be employed as a milker, and this is a situation very likely to occur, as many of the Portuguese and Swiss have typhoid and these make up the greater number of milkers.

The conveyance of typhoid by or through butter is very much less likely, in fact very unlikely if other creameries pasteurize the milk as ours does, raising it to a temperature of 145 degrees for three-quarters of an hour. This is required, I believe, by a recently enacted state law.

To sum up, then, we have: A great area of level land with little or poor drainage, supplied by a great river whose water is polluted. This water overflows a large portion of the valley area, and a considerable portion of the remaining area is irrigated by this water, coming close around the wells used for drinking purposes. Our examinations show general pollution of all surface wells.

I shall not enter into the discussion of a solution of the problem, and I trust that this may be fully brought out in discussion of this paper.

THE CARE OF NON-RESIDENT TUBERCULOUS INDIGENTS.

Report of Conference Regarding Federal Legislation, Held at Santa Barbara, October 16, 1915.

By MISS E. L. M. TATE, Director Bureau of Tuberculosis.

An interesting meeting was held in Santa Barbara, October 16th, when a Federal bill, which will be introduced at the coming session of Congress, was discussed by the State Board of Health and the California Association for the Study and Prevention of Tuberculosis.

This bill provides that, wherever non-resident tuberculous indigents are cared for in hospitals that are standardized by the United States Public Health Service, the Government will reimburse such hospitals in the amount of \$5.00 a week for the care of these patients.

In view of the fact that the western and southwestern states have been obliged to neglect their own patients, owing to the influx of these non-residents, it seems that a bill of this sort is the only practical way of solving the problem. It does not involve the expenditure of large sums of money, merely providing certain hospitals in each state where these patients can be cared for and not become centers of infection as they are now.

It is estimated that there are about 15,000 to 20,000 non-resident indigents who would come under this act. If non-resident patients who become a burden upon a community could be treated as other dependents or delinquents are treated, the situation would not be so complicated. But while an insane patient can very easily be returned to his own state, it is impossible to return a patient in the last stages of tuberculosis; first, because most of the non-residents have "chased the cure" for so long that they have no residence in any state. Unfortunately, most of the tuberculosis cases that reach California, have tried Arizona, Texas and New Mexico and have finally reached here hoping that this is the place in which to effect a cure. They arrive without funds. They must spend their last days in a county hospital and finally be buried by the county. Even with the meager care that is given these patients, it is a tremendous burden on the county. Many of the

counties, particularly in the south, justify their lack of care for their own patients on the grounds that if their hospitals were any better they would be so filled with non-residents that the county would become bankrupt.

It seems, therefore, since every state has a problem of this sort, that the easiest way out of the present difficulty would be to have an appropriation to be administered by the Public Health Service, making it possible for patients to receive the care they need and something more than a crust and a place in which to die.

Those present at the meeting were Dr. George Ebricht of San Francisco, President, and Dr. Le Moyne Wills of Los Angeles, representing the State Board of Health, Dr. C. C. Browning, President of the California Association for the Study and Prevention of Tuberculosis, Dr. Norman Bridge, President of the Los Angeles Society for the Study and Prevention of Tuberculosis, Dr. Leon Schulman of Los Angeles, Dr. Philip King Brown of San Francisco and Miss Tate, Director of the State Bureau of Tuberculosis.

Practically every phase of the tuberculosis problem has been covered by legislation of some sort, with the single exception of providing for the care of non-resident indigents. That these persons should receive adequate care can not be denied. It should be *impossible* for any person in this country, suffering from tuberculosis, not to receive decent care and treatment.

JOINT HEALTH ORGANIZATION BY SMALL CITIES ON THE COOPERATIVE PLAN.*

By B. D. MARX GREENE, City Attorney of Antioch and Pittsburg.

In October, 1914, I had the honor to present before the League of California Municipalities at Del Monte, a paper prepared by Dr. John Nivison Force, of Berkeley, on a Reorganization of Public Health Service in California by eliminating the present county and city control and placing the whole matter under the State Board of Health acting through health officers assigned to various localities. The plan as outlined in the paper was recommended by the department of health officers to the general body for its ratification, and thereafter such ratification was given at the general session. A committee was appointed to carry out the plans suggested in the paper and legislation was drawn up to be presented at Sacramento. As had been expected, certain definite opposition arose and this opposition became so active that the plan had to be abandoned at the last session of the legislature.

Conditions, however, which obtained at that time, are still with us and in fact grow worse from day to day, and it is the object of this paper, if possible, to suggest to this convention a method of eliminating the present most unsatisfactory health regulation status.

It is increasingly apparent that the State of California is confronted with two situations in its public health management which must be met without delay. Our large cities are duplicating health service and our

*Read at the Annual Conference of State, County and Municipal Health Officials, held at Oakland, September 7-10, 1915.

small cities are without any health service. An Oakland meat and milk inspector visits and inspects the same dairies and slaughter houses as the Berkeley meat and milk inspector. So also, San Francisco and other cities around the bay. In smaller communities, there is no meat inspection and no milk inspection and no proper quarantine regulations, and in many the water situation is beyond mention. Something must be done quickly and adequately.

What Was Done in Massachusetts.

I wish to call your attention to the scheme of health management adopted in a number of Massachusetts towns which was, in the beginning, in 1912, termed "An Experiment in Public Health Administration" in a paper read before the Massachusetts Association of Boards of Health, July 31, 1913, by Earle B. Phelps of the Massachusetts Institute of Technology. His plan advocated there has now progressed far beyond its experimental stage and we can get many suggestions from it, if nothing else.

It seems that the same situation confronting the small towns of California was in evidence in Massachusetts before this new plan was adopted. The small towns of Belmont, Canton, Framingham, Needham, Wellesley, Watertown, Melrose, Winchester, Welpole and Stoneham each had their desultory health organization, the efficiency of which was exceedingly limited. Professor Phelps, seeing that it was under the laws of Massachusetts a difficult and almost impossible task to get all or any of these small towns together in a health district, inaugurated a private service of health inspection and regulation and offered to each of these towns the services of the bureau at a cost based on the population of each town. There are certain fundamental departments in this bureau, such as milk inspection, plumbing inspection, and general services, including care of infectious diseases, water supply, general sanitary inspection and administration, and a town can take either or all of these various services at a certain fixed rate. The plan was gladly adopted by the various towns and was from its inception a great success.

As my time is very limited, I am not going to delve into statistics, but am attaching to this paper a table showing the per capita cost of each kind of service to the various towns, and I trust that it will be presented in the transactions of this meeting.

Specialization Is Essential.

The whole logic of the situation rests in the appointment of a full-time health officer technically trained for his duties and impervious to politics. In fact, regulation of health at any and all times must be removed from politics. It is obvious at the outset that one small town of under twenty thousand population can not afford to pay for the full-time service of an expert or experts along the various lines needed in public health administration. It is likewise obvious that proper health administration can not be obtained under the supervision of a general medical practitioner who gives only a portion of his time to the municipality and is unable to devote to the municipality the training of the public health expert. Specialization is absolutely essential. Therefore, in order to obtain the trained assistance necessary, the organization

unit must be increased by co-operation among several towns, and this is the only apparent solution unless we have state control under state officers. As Professor Phelps says, "No matter with what degree of public spirit, enthusiasm and personal sacrifice such men (local physicians and business men) undertake their duties, their work compares with the work of an efficient organization much as the work of the old volunteers compares with that of a modern fire department." We must, therefore, obtain, as he says, specialization and co-operation. Professor Phelps seems to think that co-operation can never be brought about by mutual agreement between the towns, as the question of the proper division of the expense and of the service would involve the whole project in an endless and fatal discussion. Conditions in Massachusetts must be radically different from those in California for if we can have water districts and sewer districts, there is no reason why, under appropriate legislation, we should not have health districts.

In Massachusetts each town enters into a contract with the general agent of the bureau for stipulated services at a fixed lump sum. The total appropriation of the district for the year 1915 amounted to the sum of \$7,665, and the total population served was 46,540. In Framingham, one of the typical towns, of a population of 15,600, the total annual payment was two thousand dollars and the per capita charge was 12.8 cents, and this paid for all general services, except plumbing inspection, and included care of infectious diseases, water supply, milk inspection, general sanitary inspection and administration. The only increase in expense in that city to get the expert service furnished by the bureau was \$500 per annum.

Belmont is a city of eight thousand inhabitants and its annual payment is \$1,665, and per capita charge is 20.8 cents. This included, however, the services not only furnished to Framingham, but also plumbing inspector. There was no increase in the cost of service at all by securing the services of the bureau. Certain of the other small towns took only special services. For example, Watertown, with a population of 13,667, took a complete milk inspection at a cost of \$500 per annum, and per capita 3.7 cents. Winchester, with a population of 9,316, took an analysis of milk only, with an annual payment of \$250, and 2.7 cents per capita.

While in Boston a few months ago I had the pleasure and privilege of meeting Mr. Robert N. Hoyt, who is the director of the co-operating boards of health of the towns previously mentioned in this paper. He took me on a tour throughout his district and I was greatly impressed with the efficient and painstaking manner in which the bureau exercised its supervision. I must also express to Mr. Hoyt my great appreciation for a wealth of material on this subject which he has forwarded to me. I have had copies made of the reports of the various towns which show expense ratio and work performed, and I shall be pleased at any time to furnish this information to anybody desiring it.

I can not do better in closing than to quote verbatim from a letter received by me from Mr. Hoyt which, I believe, outlines in the best possible way the work which has been accomplished under his plan.

Outline of the Plan.

"The enclosed table of towns with their populations, annual payments and the nature of the service rendered may be more concise than clear. It shows great inequalities in the per capita cost (10 cents per year per capita for Needham and 28 cents per capita for Weston) even among the group of six towns in which we perform most of all of the work carried on under the authority of the boards of health. It is the result of my annual bargaining with the finance committee of each town. In Melrose, Watertown and Winchester, we have performed only certain duties in connection with the inspections of the milk supply. The last column shows how the towns have expressed their appreciation of the service we have rendered by increasing their payments to us in order to secure more of our time.

"The annual reports of several of the boards of health are enclosed under a separate cover. They may give you a general idea of the scope of our work and our estimate of its efficiency. I am also sending a copy of each of the reports published in this organization. Unfortunately, they are all rather ancient.

"Our organization has shown that a group of towns may replace through co-operation the old system of health service which consists of a poorly organized, untrained personnel with practically no scientific laboratory equipment or adequate office or transportation facilities with a personnel, organization laboratory, office and transportation facilities comparable with the best to be found in large cities. The cost has been no greater than that paid by cities for similar service. It is found that this new, efficient service costs more than most towns were paying for the work done by their boards of health, but we frequently hear that the new and larger appropriations are voted with more enthusiasm than the smaller appropriations of former days because the citizens know that they are receiving real service.

"To be specific, none of the towns except Wellesley had a public health laboratory before joining the co-operative group. Our laboratory ranks with the best in the state. Our former bacteriologist was chosen to take the position of state bacteriologist when the state board of health was reorganized and our present bacteriologist has been chief bacteriologist of the State Board of Health of Rhode Island for four years.

"The advantage of a high grade local diagnostic laboratory has been proved to be enormous. Physicians are rapidly giving up unreliable clinical methods of diagnosis or at least supplementing them with the more precise bacteriological tests. The laboratory frequently makes possible the detection of "carriers," "infected contacts" and mild or typical cases of diphtheria and typhoid fever which showed no clinical evidence of infectivity.

"The prompt handling of infectious diseases was often impossible under the old system. The practicing physician who had charge of this work was often hard to reach or too busy or unable to obtain prompt assistance. An example of our ability to concentrate our organization at times of emergencies was afforded not long ago by a report of a case of scarlet fever on a dairy located three miles from the nearest trolley or railroad and at the extreme northwest corner of our district. The report was telephoned at five p.m. By six o'clock the patient was on

his way to the hospital in an ambulance, the house was being disinfected and although there were only the most primitive facilities on the place, three hundred quarts of milk had been perfectly pasteurized in the bottle and arrangements made for its safe delivery to customers (as usual the next morning) before the inspectors left. There were no cases of scarlet fever on this milk route and the dairyman will report the next case promptly because he knows we will protect his interests.

"This organization is by no means perfect. The efficiency could be greatly increased if we could secure the work of certain adjoining towns which would double our constituency. The laboratory could handle twice the analytical work and four times the diagnostic work with little increase in expense."

The Co-operating Boards of Health, 1915.

Table of Towns with Payments, Populations and Nature of Services Rendered.

Town	Popula- tion 1915	Annual payment (total)	Annual payment per capita (cents)	Nature of service	Increase in payment
Belmont -----	8,009	\$1,665 00	20.8	General and plumbing-----	None.
Canton -----	5,606	900 00	16.0	General -----	\$600 00
Framingham ---	15,600	2,000 00	12.8	General -----	500 00
Needham -----	6,507	650 00	10.0	General (from Wellesley)	400 00
Wellesley -----	(6,444)	1,500 00	23.3		
Plus students			21		
	8,394	1,800 00	21.4	General -----	300 00
Weston -----	2,324	650 00	28.0	General, plus plumbing--	50 00
Totals -----	46,540	\$7,665 00	16.5	-----	\$1,850 00

Milk Inspection or Special Services in the Following Towns:

Watertown -----	13,667	\$500 00	3.7	Complete milk inspection -----	
Melrose -----	16,834	500 00	3.0	Sample collection and analysis -----	
Winchester -----	9,316	250 00	2.7	Analysis of milk-----	\$50 00
Walpole -----	5,652	150 00	2.6	Irregular -----	
Stoneham -----	7,500	50 00	.7	Sample collection and analysis -----	

"General" services indicate care of infectious diseases, water supply, milk inspection, general sanitary inspections and administration.

"Plumbing" means plumbing inspection. Performed in Weston and Belmont only.

Complete milk inspection means licensing of dealers and dairies, dairy inspection, collection and analysis of milk samples and epidemiological work to detect and control epidemics of milk borne diseases.

The town of Wellesley furnishes the rooms for the general offices and laboratory with furniture, fixtures, apparatus and gas and electricity. This is figured as worth \$300 per year on our books.

DIPHTHERIA CARRIERS AND THE LAW.

(An opinion of Percy V. Long, City Attorney of San Francisco, to the Board of Supervisors of the City and County of San Francisco, September 17, 1915.)

GENTLEMEN: I am in receipt of your request for an opinion dated September 14, 1915, as follows:

"The Board of Supervisors has under consideration and up for final passage the attached ordinance relating to diphtheria carriers.

The Board desires your opinion as to whether this ordinance is in conflict with the State Health Law, and further, if the Board of Supervisors has the power to take from the Board of Health the power to isolate diphtheria carriers."

Section 1 of the proposed ordinance reads:

"The Board of Health of the City and County of San Francisco is hereby authorized and empowered to remove or cause to be removed any person or persons afflicted with smallpox, cholera, yellow fever, bubonic plague, typhus fever, poliomyelitis, diphtheria and scarlet fever residing in or being found in houses, places or districts within the City and County of San Francisco, to such hospital within the City or County of San Francisco, as the Board of Health may designate; *provided, that the provisions of this ordinance as to the removal of persons shall not apply to diphtheria germ carriers.*"

OPINION:

The following general laws bear upon the question here presented:

"The state board of health * * * may advise all local health authorities, and, when in its judgment the public health is menaced, it shall control and regulate their action." Section 2979, Political Code.

"It is the duty * * * of every county, city and county, city or town health officer, and every member of the local board of health, knowing or having reason to believe that any case of cholera, plague, yellow fever, leprosy, *diphtheria* * * * or any other contagious or infectious disease exists, or has recently existed within the city, city and county, town or township of which he is such officer, to take such measures as may be necessary to prevent the spread of such disease." Section 2979a, Political Code.

"It shall be the duty of the board of health of each municipality and incorporated town * * * to enforce within such municipality and incorporated town all orders, rules and regulations concerning health and quarantine * * * as prescribed or directed by the state board of health." Section 2984, Political Code.

"It shall be the duty of every county, city and county, municipal, town or other health officer or inspector to enforce diligently within the county, city and county, municipality, town or district of which he is such health officer, all state laws pertaining to health

and sanitary matters, and all orders, rules and regulations concerning health, quarantine and disinfection prescribed or directed by the state board of health, and all local ordinances, resolutions, orders and regulations concerning health, of the board of supervisors which shall not be in conflict with the general laws or the orders, rules and regulations of the state board of health." Section 11, Public Health Act, Statutes 1907, p. 895.

You will observe that section 2979a of the Political Code above quoted makes it the duty of the local Board of Health and the Health Officer to take such measures as may be necessary to prevent the spread of all contagious or infectious diseases, including diphtheria. In so far as this ordinance attempts to take away entirely from the Board of Health the power to isolate diphtheria germ carriers, it is in conflict with this section of the Political Code, because if it is necessary to prevent the spread of diphtheria to isolate diphtheria germ carriers, this section makes it the imperative duty of the Board of Health to isolate them.

In addition to this, the other sections of the Political Code above quoted make it the duty of the local Board of Health to enforce the orders, rules and regulations of the State Board of Health with regard to matters concerning public health, and section 11 of the Public Health Act, after providing that every local Health Officer must enforce diligently all state laws pertaining to health and sanitary matters, and all orders, rules and regulations concerning health, quarantine and disinfection prescribed or directed by the State Board of Health, adds that they shall enforce "all local ordinances, resolutions, orders and regulations concerning health, of the Board of Supervisors *which shall not be in conflict with the general laws or the orders, rules and regulations of the State Board of Health.*"

Pursuant to the power vested in them, the State Board of Health has adopted certain regulations for the prevention and control of diphtheria. These are embodied in Special Bulletin No. 8, issued by the California State Board of Health August 1, 1914. Rule 11 therein reads as follows:

"Any person who has been free from symptoms of diphtheria for a month or longer and who harbors diphtheria bacilli is a carrier. Any known or suspected diphtheria carrier shall be reported to the local health authority, who shall investigate and report to the State Board of Health. Pending the receipt of instructions from the State Board of Health, the local health authority shall isolate or quarantine the carrier, if, in his judgment, the danger to the community necessitates such action. In the event of any known or suspected carrier leaving the jurisdiction of a local health authority, the State Board of Health shall be notified by the local health authority of the name of the carrier and his destination."

It is evident that this ordinance is also in conflict with this rule of the State Board of Health which, by section 11 of the Public Health Act and the above quoted sections of the Political Code, it is made the express duty of the local board of health to enforce.

Section 6 of Article XI of the Constitution of California provides that:

“Cities and towns * * * are hereby empowered * * * to make and enforce all laws and regulations in respect to municipal affairs, subject only to the restrictions and limitations provided in their several charters, and in respect to other matters they shall be subject to and controlled by general laws.”

The public health is not exclusively a municipal affair. It is a matter which vitally concerns the people of the entire State. Judge McFarland, in his concurring opinion in the case of *People vs. Williamson*, 135 Cal. 415, says:

“The public health is a matter in which the whole people of the State are concerned; and as the preservation of the public health of all the people depends upon proper regulations in every part of the State, the legislature has power to pass laws on that subject enforceable in every nook and corner of our territory, including those localities embraced within the municipalities as well as the most sparsely settled agricultural or mining districts. And, in my opinion, whenever the provisions of a municipality, by charter or otherwise, on the subject of public health, conflict with laws of the legislature on that subject, the former must yield because ‘in conflict with general laws.’ The public health is not a ‘municipal affair’ in the sense of excluding the jurisdiction of the State over it.”

Judge Van Dyke, in the same case, said:

“It is quite true that the preservation of health concerns the whole State as well as the city. In such matters it may be found necessary for the State, by general laws operating outside as well as in cities, to provide against the spread of contagious diseases, and like matters.”

I agree with this view and I must, therefore, advise you that in so far as this proposed ordinance is in conflict with general laws, as herein pointed out, it will be void, and that your honorable board can not by ordinance or otherwise take from the Board of Health the power to isolate diphtheria germ carriers lodged in them, by the laws of the State.

Respectfully,

(Signed) PERCY V. LONG,
City Attorney.

THE MENACE TO UNDERGROUND WATER SUPPLIES IN CALIFORNIA DUE TO THE POLLUTION OF DEEP WATER-BEARING STRATA BY THE DIRECT DISCHARGE OF SEWAGE THEREINTO.*

By CHARLES GILMAN HYDE, Professor of Sanitary Engineering, University of California, Consulting Engineer California State Board of Health.

The Problem Stated.

A year ago, at the Del Monte meeting of the League of California Municipalities, the writer had the privilege of presenting a paper entitled "Public and Private Ground Water Supplies in California, with Special Reference to Their Composition and Hygienic Safety." In that paper the following statement was made:

"In some sections of this State a scheme of private sewage disposal has been developed which augurs badly for the future of the ground waters in the regions where such methods are employed. In the vicinity of Stockton, and in the environs of Sacramento, for instance, it is understood that the sewage from private residences is being treated in small septic tanks constructed at a convenient depth below the surface of the ground and from which the effluent is being discharged into deep wells, perhaps 10 or 12 inches in diameter, sunk to porous strata. These wells, it is understood, are sometimes as many as 60 feet deep. They are carried to this depth because the overlying materials are tight and not sufficiently porous to permit of disposal by ordinary cesspools. It would seem to require no extended comment to make apparent the grave danger which lurks in this practice. In the first place it is to be recognized that the septic tanks provided can not and will not remove disease germs nor other typical sewage organisms. These, therefore, must pass with the effluent down into the subterranean waters. In these, if the materials are sufficiently porous, they may be transported through considerable distances, possibly eventually to enter wells taking water from the same porous strata. Even if the time element were sufficient to insure the actual destruction of the pathogenic bacteria, it is certainly not a pleasing situation to realize that this water contains great quantities of dissolved organic matter whose origin is sewage."

Specific Instances of Ground Water Pollution Due to this Cause.

Since the Del Monte paper was written, the writer's attention has been specifically directed to three typically dangerous cases of underground water pollution of the sort in question. One of these cases was in the vicinity of Sacramento, another was in the neighborhood of Stockton. The third was in the vicinity of Fresno. To this last case further reference will be made.

*Read at the Annual Conference of State, County and Municipal Health Officials, held at Oakland, September 7-10, 1915.

In March, 1915, a certain county health officer addressed a letter to the State Board of Health directing its attention to a demonstrated contamination of a certain public water supply. The situation described in the letter may be outlined as follows: The community of X is supplied with water by a certain company. The supply is derived from a well about 130 feet deep, located one-half mile distant from the town to the south. The town is not provided with sewers and open privy vaults are in use. In this vicinity the direction of flow of underground water is from east to west. In order to dispose of the sewage from certain shops, in which from 25 to 50 men are employed, three wells or sumps, 130 feet deep, were sunk in the ground in a location about 600 feet east of the position of the water well in question. Into these sumps or wells sewage has been discharged and has thus been disposed of. It will be noticed that the sewage wells and water well are of the same depth, and in this case unquestionably penetrate the same formation and water-bearing strata. Prior to the sinking of the sewage sumps or wells the water supply well was free from contamination, but shortly after the practice was begun of disposing of the sewage by delivery into the same water-bearing strata as are penetrated by the water well, *B. coli* (the typical intestinal bacterium of man and animals) began to appear in the water of the well. The county health officer, properly alarmed, asked what might be done in a matter of this sort.

Importance of Underground Water Supplies.

Importance to rural populations.

It is probably safe to say that the great majority of the rural population in California, as well as in other sections of the United States, is supplied with water from the ground by means of wells. The shallow well has hitherto predominated and perhaps always will. Notwithstanding the fact that underground waters are inherently safer from a bacteriological and hence from a sanitary standpoint than are surface waters, the fact remains that many of them, especially those found at comparatively small depths, are grossly polluted. Our rural populations can not tolerate any wholesale pollution of their water supply. It is obvious that the conservation of the purity of such sources constitutes one of the most important obligations resting upon these people.

Importance to communities.

The most recent statistics* for California show that in 238 places listed, 126 are supplied entirely, and 30 in addition are supplied in part, from the ground, the remainder, or 82 places, being supplied from surface sources. Ground water supplies are peculiarly adaptable and available to small communities because the volumetric requirements of such communities are relatively small and because no expensive purification is required if the supply is derived from a proper underground source whose purity has been properly conserved. We may, therefore, repeat with respect to communities what has just been said with reference to rural populations, namely, that such populations can not tolerate any contamination of the underground waters from which their supplies are derived. All cases of contamination should be brought

*McGraw Water Works Directory, 1915.

to the attention of the State Board of Health which is now organizing a sanitary engineering department to co-operate with the already well established hygienic laboratory. These departments will be able to give serious and helpful consideration to such problems.

The Innocuous Disposal of Sewage.

Sewage disposal a fundamental duty.

The adequate and proper disposal of sewage is a fundamental duty which rests alike on the isolated rural family and the community which is provided with a modern sewerage system. The farmer must not pollute his own or his neighbor's water supply through faulty and unhygienic methods of disposal of fecal and other waste materials. Likewise the community, whether an institution, a residential subdivision or an incorporated town, must not contaminate its own supply nor render that of its neighbor unsuitable. These requirements have especial force with reference to ground waters because these are normally presupposed to be safe and to require no purification. This discussion does not, of course, apply to those certain surface sources which are polluted more or less directly by sewage not merely by one but by many communities, and hence are unfit for water supply purposes without adequate purification.

The dangerous character of sewage.

The dangerous character of raw sewage must be obvious to all. The human fecal wastes may contain the germs of many diseases, especially those of the intestinal tract, such as typhoid fever, cholera, dysentery and perhaps certain other infections now but imperfectly recognized and understood. These germs have the capacity to exist for certain more or less brief intervals of time under untoward conditions and for longer periods if the conditions happen to be favorable. As a rule all natural conditions in surface and underground waters must be considered as relatively unfavorable and therefore the longevity of these organisms will usually be represented by only a few days. The distances through which such germs may be conveyed by underground waters must depend wholly upon the velocity of flow and the size of the soil particles. The coarser the material and the more rapid the flow therein, the greater becomes the danger of sub-surface contamination.

Treated sewages can rarely, if ever, be rendered wholly free from pathogenic organisms. Nothing less than the most comprehensive of chemical sterilization methods can give any assurance whatever of safety as far as such organisms are concerned. Preparatory treatments, such as sedimentation and sludge digestion in Imhoff and Cameron-type septic tanks, probably remove only a very small percentage of such organisms.

The purification of sewage in soils.

The purification of sewage in the soil is a bio-chemical-mechanical process. The suspended matters, including the bacteria will, if the material is sufficiently fine, be removed from sewage by mechanical straining through soils. But all chemical changes and the oxidization of organic matter must depend upon a complex inter-action of the

bacteria and other organisms resident in the soil and of oxygen contained in and absorbed by the soil. The mechanical straining action may take place at any depth. But the bio-chemical activities are largely limited to the uppermost few inches, or at any rate, to the upper few feet of the soil. From these facts the inference must be clear that if it is desired to purify sewage as completely as possible, it should be introduced into the soil as near the surface as possible. For this reason, broad irrigation or "sewage farming" as it is sometimes called, represents, when available and properly conducted, the most efficient method of sewage purification. Intermittent treatment through sand filter beds represents another extremely efficient process under those conditions to which it is applicable. Sub-surface irrigation through tile pipes, laid in porous material near the surface of the ground, is a third extremely effective method of sewage disposal, judged from the standpoint of bio-chemical purification.

Residential sewage disposal.

In rural homes where the water supply has been introduced and this has been followed by the installation of toilets, baths, lavatories and other so-called modern conveniences, the disposal of sewage becomes a most important and oftentimes a difficult duty. This disposal must be accomplished without polluting the underground water of the vicinity. Two fundamental requirements must here be met: (1) The sewage must be conveyed to a point distant so far as possible from any well and down stream, that is, below or beyond the well in the direction of travel of the ground water; (2) it should be discharged into the soil as close to the surface as possible.

Where reasonably porous surface materials are to be found, some form of leaching cesspool or septic tank would seem to be the most reasonable type of installation. The tank may be built of redwood, or concrete, preferably the latter, and should be tight. In moderately porous materials it should be built upon and surrounded with, screened gravel at least 12 inches thick, in directions perpendicular to the bottom and side walls of the tank. In more open soils the gravel layer beneath the bottom of the tank may be omitted and the sand body around the sides of the tank need be carried only perhaps three or four feet below the water level in the tank. In still more porous materials, such as coarse sand or gravel, it will be entirely unnecessary to provide any specially screened materials around the tank. The water depth of the tank should never be less than four feet and better five or six feet, and the length of the tank should be three or four times the breadth. The sewage should be thoroughly diffused through the tank and the scum should be retained and prevented from passing through the effluent tank by means of proper baffles. The effluent pipes should be arranged to discharge into the surrounding porous materials at the elevation of the normal water surface in the tank through numerous openings of such size that they will not readily become clogged.

Where the soils are so tight that the area of absorption and percolation provided with the type of construction above described will be insufficient, the sewage may be disposed of through lines of agricultural tile drains, laid with open joints, in trenches from 12 to 18 inches deep,

filled with gravel. The gravel particles immediately surrounding the pipe should be of such size that they will not enter the joints and clog the lines. Wherever the slope of the surface will permit these lines of tile should be dosed intermittently by means of an automatic syphon in a suitable chamber constructed at the outlet end of the cesspool or tank. The capacity of the syphon chamber should be from two to three times the internal capacity of the tiles, depending upon conditions. It is a good idea whenever possible to employ two or three systems of tile lines dosed week by week in rotation, thus allowing one or more systems to rest while one is in service. It is to be recognized that in our flat valleys the automatic dosing with syphon of the type in question is quite impossible because of the great depth to which the sub-surface irrigation lines would require to be laid.

On isolated farms where plenty of land is available with sufficient fall, the disposal of the small amount of sewage ordinarily contributed by households may be easily accomplished by irrigation.

Institutional and community plans.

All institutional and community sewage treatment plans whose effluents are not to be disposed of by dilution in water courses, should be most carefully considered by an experienced engineer and the scheme of disposal which is selected should be one which will protect the underground water of the region if utilized or likely to be utilized, as a source of domestic water supply. The general principle should be invoked that the sewage should be distributed over the soil as close to the surface as possible. Broad irrigation and intermittent sand filtration, or sprinkling filters and contact bed treatment, coupled with chlorination, are available methods of disposal for specific cases. In no event should such sewage, whether raw or treated, be disposed of in such fashion that it will enter the ground waters of the region in an unpurified condition and thus become a menace to the health of those who perforce must derive their water supplies from such a source.

The location of wells with reference to source of pollution, such as sewage disposal plans.

This matter was discussed at length in the writer's paper referred to above presented to the Del Monte meeting of the league. The whole subject is one which is involved and requires the most careful consideration. Obviously the greater the distance between any possible source of pollution and the source of the water supply, the better. In all cases of doubt, with existing plants, bacteriological analyses should be made to determine whether or not dangerous bacteria may be present in the water supply, and if so, to demonstrate the source of the pollution and the best means of permanent removal. Where sewage disposal works are projected in the vicinity of ground water supplies or vice versa, the condition should be very carefully examined and every precaution should be taken to conserve the hygienic quality of the underground waters.

CLASSIFICATION OF STREAMS FROM THE STAND- POINT OF SEWAGE POLLUTION.*

By CHESTER G. GILLESPIE, Director and Chief Engineer, Bureau of Sanitary Engineering, California State Board of Health.

The purpose of this paper is to set up a broad standard of purity and permissible sewage pollution of streams in this State to show how variable are the sewage problems presented and to indicate the extent of treatment necessary for their solution. Especially is it desired to impress that, whereas the need of extensive treatment exists in but a few towns in California at this time, the future will bring with its gradual congestion of population sewage problems to this State just as large as any which now engage the attention of the East and involving expenditures many times larger than those for the purpose to which we are now accustomed. In view of this inevitable requirement, collection systems of the present must be designed to accommodate the probable treatment works demanded by the future.

The time is not available to paint a word picture of the State, but we are probably all sufficiently familiar with it to appreciate that the following classification of its streams is a rational one from the sanitary standpoint:

(1) Streams and lakes located in regions primarily devoted to pleasure seeking purposes and to the collection and storage of municipal water supplies. Such bodies of water should at all times be safe for drinking and domestic purposes without purification.

(2) Lowland streams more or less intermittent in character which are obviously not suited as a source of water supply. The aesthetic and not the sanitary requirement is here important.

(3) Lowland streams whose flow is sufficiently continuous to be used for water supply but subject to such numerous sources of pollution that purification of such supply must precede use. Such streams must be maintained in a thoroughly aesthetic condition and must be easily redeemable for domestic water supply.

(4) Lowland streams promiscuously, and of necessity used for water supply. A high degree of purification, including disinfection of the effluent should be given sewages discharging into such streams.

Methods of Treatment.

In the same outline fashion sewage treatment processes may be grouped according to the degree of treatment effected as follows:

Primary treatment—

- (1) Screening.
- (2) Sedimentation, coupled with sludge digestion.

Final treatment—

- (1) Oxidation.

Disinfection—

- (1) Sterilization.

The status, uses and limitations of these various processes were reviewed in the paper presented yesterday.

*Read at the Annual Conference of State, County and Municipal Health Officials, held at Oakland, September 7-10, 1915.

Application to Sewage Problems.

The selection of the type of plant, or of various combinations of plants to solve the various sewage problems that arise in stream conservation, requires a broad view of the entire problem from a sanitary and an economic standpoint, considering not alone the situation near at hand, but the effect on the stream sometimes to its very mouth, and the requirements of twenty or thirty years hence as well as of the present. It is a problem properly settled by expert opinion and studies.

Mountain streams. The problem of conserving the purity of mountain streams is becoming more and more insistent. California is the campers' paradise. An increasing army of Nature's devotees repair to her wildnesses every summer; this, in addition to a permanent population of miners, prospectors, laborers and shepherders. There results a population resident in dwellings permanently located—a retreat, a lodge, an inn, or the more modest dwelling of the mountaineer—and an itinerant population of hikers and campers. Practically all mountain residents depend on the adjacent stream for water supply, and if the region is not to be abandoned by pleasure seekers the question of water supply must not disturb their pleasure. There are few streams which can not be maintained safe if there is a reasonable regard for stream purity. Pollution travels quickly in these fast-flowing mountain streams and self-purification factors get small chance to exert an influence. High-class sewage treatment works can hardly be afforded in most cases, and even after construction, are uncertain because of lack of attention to their operation. They may often give a false sense of security. In all cases the constant endeavor must be to prevent the arrival of dangerous waste at the stream.

In the case of wastes from a temporary camp of a night or of several weeks, the greatest precaution must be taken to prevent nuisance near the stream banks. If points of disposal can be kept a couple of hundred feet from the stream, there is little chance of its arrival in the stream until the following winter rains wash the matter down the slope. When feasible, burial is a still better means of disposal.

In the case of more permanent abodes, whether the sanitary conveniences include flushing fixtures or merely a privy, the same precaution of removing the location of structures as far from the stream as possible should be taken. A privy should be of the sanitary type and fly-proof. The best type of privy is that in which the excreta is collected in pails, beneath the seat, which are removed from time to time and the contents buried. Lime, or even ashes, thrown over the excreta in the privy and on burial is a commendable practice. If used in large enough amounts disease bacteria and particularly typhoid, are killed by its use.

Family residences with a water-carriage system of removing wastes can scarcely afford an elaborate system of sewage treatment. Clarification in a septic or two-story tank followed by disposal by seepage into the soil, either surface or sub-surface application, is probably the best that can be considered. Often the same treatment on a larger scale can be used for mountain hotels. If the ground is not easily drainable, a sprinkling filter might have to be used instead of sub-surface

irrigation. None of the works indicated can be depended upon to get constant attention or to work uniformly well, hence in every case sewage disposal should occur as far from the stream as possible.

Sanitary placarding of the regions frequented by pleasure-seekers with warnings and instructions somewhat after the fashion of that done by the rangers in preventing forest fires, would be of great benefit in controlling stream pollution. It may be possible to secure cooperation with the Forest Service in distributing such placards in important mountain places in order to avoid duplication of organization. Such work would be in line with the policy of general usefulness which moves that service in its relations with the mountain public.

Lowland intermittent streams. These streams generally rise in the lower mountains or foothills, and depend on such small mountain watersheds or scanty rainfall that most, or all of any permanent flow is lost by seepage and evaporation farther up stream. Such streams often pass through small towns and are early used for disposing of community wastes. As long as the towns are small and under certain favorable climatic and soil conditions, no nuisance may result. In general, however, such a means of sewage disposal is bound to result in complaints from near-by residents as the sewage accumulates and becomes stagnant in the immediate vicinity. Treatment works must aim at getting a stable effluent—that is, one fully oxidized. Hence, in addition to tankage treatment, the sewage must be treated in a sprinkling filter, or if local conditions make it more economical, in intermittent sand filters or by broad irrigation over porous soil.

Polluted lowland streams subject to use for water supply. There are some streams of the State which are, or will soon be, so seriously polluted that their use for domestic purposes would not be considered by regular habitants along their course. Large expenditures in intensive sewage treatment to remove the dangers to which a few expose themselves, ignorantly or otherwise, can hardly be considered an economic policy. Considerable pollution of such streams may therefore be permissible. Pollution must not be so great, however, that chemically and aesthetically the stream will be unfit for water supply. The safe dilution in this case will depend on the time interval between pollution and diversion for use. It must usually be higher than that necessary for the prevention of nuisance. Even where the stream flow does not approach this critical limit, screening to prevent unsightly floating solids on the stream must be considered as a minimum requirement.

To make such waters desirable and safe for domestic consumption, filtration combined with disinfection represents the most satisfactory and economical method known. There have been few notable advances in water purification methods in the last few years and those in vogue will probably remain standard for many years. The rapid sand filter of the open filter or gravity type, using a coagulant to agglutinate the minute impurities for effective removal on a sand bed is the common installation. It is feasible to use enough coagulant and to exercise enough care to produce a reasonably safe water at all times but for economy and greater insurance it is much more advisable to use only enough coagulant to secure clarification in the filter depending on the

disinfectant to destroy the bacteria. By this plan of operation the coagulant cost can be cut two-thirds. Disinfection of water is accomplished as in sewage by the use of hypochlorite of lime or liquid chlorine. As in sewage treatment, the latter is of no greater cost than the hypochlorite of lime and is much more easily manipulated.

Waters having no objectionable turbidity or color require no filtration.

Lowland streams not adapted to systematic purification of derived water supply. Such streams are those naturally attractive for domestic and drinking purposes and subject to such promiscuous use that purification of the water is either entirely out of the question or can not be systematically accomplished. This will be the case particularly with clear mountain streams used for irrigation in the upland regions. Fortunately, such streams are not subject to great pollution and with proper intensive sewage purification may be maintained safe. If the dilution is great, disinfection of the sewage in well designed works, vigilantly operated, would constitute sufficient safeguard. On account of the reduced doses of the chemical necessary for treated sewage over that required for crude sewage, it will usually be found economical to give a preliminary treatment followed possibly by oxidation before disinfection.

STANDARD FORMS AND OFFICE EQUIPMENT FOR HEALTH DEPARTMENTS IN SMALL CITIES.*

By HAROLD F. GRAY, City Health Officer, Palo Alto.

Accurate records are an absolute essential in public health work. By such records alone are we able to measure the effectiveness of our work and direct our energies along the lines that will yield the greatest results. Next to full-time technically trained health officers, there is hardly any other need so important. Yet when we try to analyze public health conditions in the majority of small cities, we find that but little information can be obtained, due to a lack of properly kept records. The average health officer not only has no satisfactory records; he hasn't even a satisfactory idea of the real needs of his community or a concrete plan of what he intends to do.

The main reason for this unfortunate state of affairs is that our health officers in small communities are usually practitioners of medicine who give only a small part of their time to public health work, and are legitimately more concerned with their private practice than with the public welfare. This is a condition which can be remedied only by slow degrees, but the beginnings at least have been made. A secondary reason is that there is not at present extant any satisfactory system of forms and equipment for the keeping of health department records and statistics, except for the keeping of birth and death records, and these are usually not kept by the health officers of small cities, but by the county recorders. This condition can be remedied to some extent by action of this section of the League of California Municipalities.

*Read at the Annual Conference of State, County and Municipal Health Officials, held at Oakland, September 7-10, 1915.

If a set of standard forms for the keeping of records were prepared by this section and made easily available, it is probable that at least a few health officers would make use of them at the start, and in time their use would be universal.

Every incorporated city or town, no matter how small, should maintain a definite health office with a fixed location, preferably the city hall if there be one, and should equip the office with sufficient paraphernalia to properly file all records. The amount of such equipment is small and not expensive, and if a standard minimum office equipment were recommended by this body, it would be more easily possible to persuade the council or board of trustees to appropriate money for it.

I have appended to this paper two lists, one of the minimum forms which every health department should be supplied with, the other of the minimum office equipment. I request that the chairman of this meeting appoint a committee of not more than five to prepare a report for presentation at the next meeting of this section of the league, which report shall cover the matter of standard forms and office equipment for city health departments in detail.

LIST I.

Standard Forms.

NOTE.—The standard size of form shall be a 4 by 6 card.

History and record card for diseases; instructions regarding isolation and quarantine; placards for diseases (should contain condensed directions in small type); postal card report of cases, recoveries and deaths for physician's reports; notice of exclusion from school; permit to attend school; nuisance record blank; abatement notice; notice to parents of exposure to disease (for schools); vaccination notice for schools; vaccination certificates; duplicate vaccination certificates; physician's certificate of excuse from vaccination on account of physical condition; weekly report of cases of disease, births, deaths; report to public library of diseases; record of private wells; record of privies and cesspools; "no spitting" placards; application for license to sell milk or cream; dairy score cards; creamery score cards; individual cow record and identification; monthly average of milk tests; detailed record of milk tests; score cards for bakeries, markets, restaurants; report to dairyman of milk tests; laboratory diagnosis report and record card; standard birth certificates; standard death certificates; standard supplemental birth report; standard burial permit; standard removal permit.

Miscellaneous Forms.

Small city maps, about 12 by 15; one large city map; printed code of ordinances; routine sanitary inspection record book; dairy inspection record book; rubber stamps—"name of city," "second notice," "board of health"; letterhead and envelopes; daily diary; birth register; death register; laboratory record book of milk samples; laboratory record book of water and food samples; standard form of weekly report; standard form of monthly report; standard form of annual report; standard form of financial statement.

LIST II.

Office Equipment.

Books: Manual for Health Officers—MacNutt; Hemenway on Public Health; International List of Causes of Death; Preventive Medicine and Hygiene—Rosenau; Clinical Diagnosis—Simon; Food Inspection and Analysis—Leach; Chapin—Sources and Modes of Infection; Hiss and Zinnser—Bacteriology; Ward—Pure Milk and the Public Health; Stitt—Practical Bacteriology, Blood Work and Animal Parasites; Sherman—Food Products; Sedgwick—Principles of Sanitary Science and the Public Health; Standard Methods of Water Analysis—A. P. H. A.; Standard Methods of Milk Analysis—A. P. H. A.; Medical Diagnosis—Greene or Hare; *American Journal of Public Health* (monthly); *Public Health Reports* (weekly); Hazen—Clean Water and How to Get It; Daniels—Operation of Sewage Disposal Works; Stein—Water Purification Works and Their Operation.

Furniture and Filing Equipment.

Office desk and chair, two tables, four chairs, typewriter, one 6-drawer 4 by 6 filing cabinet, one 4-drawer letter file, one 6-drawer cabinet for forms, one satchel, two small card files, "grip" binders, I. P. binders, wire baskets for letters.

Miscellaneous.

Ink, paste, pens, pencils, erasers, carbon paper, clips, thumb tacks, rubber bands, ink pads, copies of ordinances and state laws, flashlamp, bulletins of other health departments.

NOTE.—This list is intended to be suggestive rather than exhaustive.

THE OCTOBER MEETING OF THE STATE BOARD OF HEALTH.

The State Board of Health held its regular monthly meeting in Sacramento on October 2, 1915. The members present were Dr. George E. Ebright, President; Dr. F. F. Gundrum, Vice-President; Dr. Adelaide Brown, Dr. Robert A. Peers, Dr. Edward F. Glaser and Dr. Wilbur A. Sawyer, Secretary. Much business was transacted in addition to the items selected for this brief report.

The resignation of Dr. Nathan G. Hale, Assistant to the Secretary, was accepted, to take effect on October 15th. Mr. L. B. Mallory was appointed to succeed him.

Questions of public health education were freely discussed. Enlargement of the monthly bulletin was approved, and the Secretary was directed to accept certain invitations to deliver addresses on public health subjects.

A plan for a systematic investigation of malaria in California, presented by Dr. J. C. Geiger, Acting Director of the Bureau of the Hygienic Laboratory, was approved. It was suggested that the Secretary hold a conference with Mr. Kemper B. Campbell, Attorney to the Board, relative to the best method of working under the Mosquito

Abatement Act with a view to reducing malaria. The Secretary was instructed to transmit to the Hooper Foundation for Medical Research the thanks of the Board for their investigation of malaria in California and for transmitting to the Bureau of the Hygienic Laboratory the records of their findings. The Secretary was instructed to hold a conference with the State Fish and Game Commission relative to the best method of obtaining and transporting surface-feeding minnows for stocking mosquito breeding pools.

Various designs for the official badge of the State Board of Health were examined and a choice was made.

The action of the Secretary in appointing, through promotion, Miss Edna A. Morton to the position of Deputy Statistician, vice Lewis V. Boyle, Jr., resigned, was confirmed.

The method of correcting errors in birth certificates was discussed. It was decided that the Board could not legally make a regulation that that portion of the new law on the registration of births and deaths, which applies only to the method of correcting death certificates, should also apply to birth certificates, and that birth certificates must be corrected in accordance with the provisions of the previous law until the new law is corrected by amendment.

It was the sense of the meeting that the records of cases of tuberculosis and other reportable diseases should not be open to public inspection and that the opinion of the attorney regarding the necessity for future legislation to protect these records should be obtained.

On account of the rapid development of the Southern California Branch of the Hygienic Laboratory at Los Angeles, under the direction of Dr. Walter V. Brem, it was decided to designate it the Southern California *Division* of the Hygienic Laboratory. The attorney of the Board was asked for an opinion regarding the legality of changing the name of the Bureau of the Hygienic Laboratory to the Bureau of Communicable Diseases in order that the name of the Bureau would be more descriptive of its enlarged functions, which include epidemiological field investigations.

In accordance with the recommendations of the Director of the Bureau of Sanitary Engineering, Mr. Chester G. Gillespie, a permit was granted to the city of Sacramento to discharge its sewage into the Sacramento River after screening.

Several instances in which nuisances existed as the result of improper disposal of sewage were considered in detail. The following resolution was passed:

Resolved, that, after investigation by the Director of the Bureau of Sanitary Engineering, the Board finds that an intolerable nuisance is being created in Guadalupe Creek by the discharge of sewage of the College Park Sanitary District, and instructs the Secretary to write to the Sanitary Board of College Park, urging that the College Park sewer be connected with the San Jose sewer, as further alterations in the treatment works will be only makeshifts unless sums are expended greater than those required for connection with the San Jose sewer, and the Board orders that the Chief Engineer be instructed to co-operate with the local authorities.

The Board instructed the Secretary to write to the city of Los Angeles stating that, after investigation, the Board had found that an intolerable nuisance was being maintained in the vicinity of Hyperion by the sewage of the city of Los Angeles and that it was imperative that steps be taken at once to abate the nuisance.

It was decided that the quarantine against rabies at Long Beach should not be discontinued until the usual period of six months had elapsed.

The State Civil Service Commission was authorized, through the following resolution, to use examination questions prepared by the State Board of Health:

"That the State Civil Service Commission be allowed to use, in their examination for an eligible list for nurses for State institutions, the questions which are given in the examination held by the State Board of Health at the same time; also that this arrangement is entered into with the understanding that the State Civil Service Commission will accept for their eligible list, nurses receiving a satisfactory grade in the examination given by the State Board of Health and declaring, at the time of the examination, their intention to enter the State service, subject to their receiving a suitable grade in such oral examination and experience record as the State Civil Service Commission may require; and it is understood that all marking of examination papers will be done by the State Board of Health even when the examination is held under the auspices of the State Civil Service Commission."

The Secretary was empowered to appoint a Director of the Bureau of Tuberculosis, after names had been certified by the State Civil Service Commission, and after consultation with members of the Board.

St. Mary's Hospital in San Francisco, having been inspected and found to meet the requirements of the Board, was accredited for one year, on the recommendation of Miss Anna C. Jammé, Director of the Bureau of Registration of Nurses.

The license of Registered Nurse was granted to three candidates.

Licenses to operate cold storage warehouses were granted to the following companies: Union Ice Company, Bakersfield; Santa Barbara Ice Company, Santa Barbara; Marysville Ice and Cold Storage Company, Marysville; National Ice and Cold Storage Company, Stockton. One application for license was refused.

The Board next held hearings regarding alleged violations of the food and drug laws. In each instance decision was made whether the violation warranted referring the case to the local District Attorney for prosecution and publishing the name of the violator in the Monthly Bulletin.

W. A. SAWYER,
Secretary.

NOTICE

Plans for Water Works and Sewage Disposal Plants Must be Approved by the State Board of Health

WARNING TO MUNICIPALITIES, CORPORATIONS AND INDIVIDUALS

Through the newly created Bureau of Sanitary Engineering, the State Board of Health proposes to exercise immediately its power of review and approval of all plans of proposed works for water supply and purification, sewage collection, treatment and disposal, and for alterations, modifications or additions to existing works. Individuals, corporations and municipalities are warned against proceeding with construction of sanitary works in the absence of such approval.

In order to avoid if possible the necessity for radical revision of plans submitted, the Bureau of Sanitary Engineering will be glad to confer informally in a preliminary discussion of plans which may meet the approval of the State Board of Health.

Plans and specifications for all sanitary works in contemplation or under construction, should be submitted to:

Director, Bureau of Sanitary Engineering, Room 102 Civil Engineering Building, Berkeley, California.

ANNOUNCEMENT.

Bureau of Sanitary Engineering Ready to Examine Samples of Water.

The Bureau of Sanitary Engineering is now prepared to receive requests for bacteriological and chemical analyses of water supplies from individuals, corporations or municipalities, where doubt exists as to the purity of such waters. In general, it will be impossible for a representative of the Bureau to inspect the supply and collect the samples. Samples are analyzed only when collected and shipped in the sterilized, glass-stoppered bottles sent out by the Bureau in response to requests for analyses. Such requests must, in general, be approved or presented through the local health officer, stating reasons for desiring same.

Shipping cases will be sent by express, charges collect, and must be returned by express on the date specified by the Bureau, charges prepaid. Shipping cases for bacteriological samples must contain ice to inhibit growth of bacteria in transit. Full information on all factors possibly affecting the quality of the water is asked on blanks accompanying each sample bottle. It is respectfully requested that these be carefully filled out.

REPORT OF THE BUREAU OF ADMINISTRATION FOR SEPTEMBER, 1915.

W. A. SAWYER, M.D., Director.

MORBIDITY REPORTS.

GUY P. JONES, Morbidity Statistician.

Smallpox apparently is becoming less prevalent in California, but in spite of the fact, there is no assurance that the disease may not become widely prevalent at any time in unvaccinated communities. Not since June, 1911, have so few cases been reported during a single month as during August of 1915, when there were but four cases in the entire State of California, and there were but six cases during September. During 1911 there were but one hundred and seventy-nine cases in the State. In 1912 there were several important outbreaks, making a total for that year of eight hundred and twenty-one cases. There were almost as many in 1913, when seven hundred and twenty-nine were reported. There was a slight diminution in 1914, the number falling to six hundred and seventy-seven, while for the first nine months of 1915, only three hundred and four cases have been reported.

Smallpox.

Distribution of Cases reported during September, 1915.

Counties and cities	Number new cases reported during month	Deaths	Vaccination history of cases			
			Number vaccinated within seven years preceding attack	Number last vaccinated more than seven years preceding attack	Number never successfully vaccinated	Vaccination history not obtained or uncertain
Alameda County—						
Oakland -----	1		1			
Kern County—						
Bakersfield -----	1					1
Los Angeles County—						
Los Angeles -----	1				1	
Mariposa County -----	1				1	
Placer County—						
Roseville -----	1					1
San Joaquin County-----	1					1
Totals -----	6		1		2	3

Typhoid Fever.

Distribution of Cases reported during September, 1915.

Counties and cities	Number of new cases reported during month	Counties and cities	Number of new cases reported during month
Alameda County—		Plumas County -----	1
Alameda -----	2	Sacramento County -----	2
Berkeley -----	2	Sacramento -----	14
Hayward -----	1	San Benito County—	
Oakland -----	6	San Juan -----	2
Pleasanton -----	1	San Bernardino County—	
Colusa County -----	3	Redlands -----	2
Contra Costa County—		San Bernardino -----	1
Richmond -----	1	San Diego County—	
Fresno County -----	1	San Diego -----	2
Kern County -----	1	San Francisco -----	25
Lake County -----	1	San Joaquin County -----	1
Lassen County -----	8	Lodi -----	1
Los Angeles County -----	2	Stockton -----	5
Burbank -----	1	Santa Barbara County -----	1
Long Beach -----	4	Santa Clara County -----	2
Los Angeles -----	20	Palo Alto -----	2
Pomona -----	1	San Jose -----	2
Madera County—		Siskiyou County—	
Madera -----	1	Montague -----	1
Marin County—		Yreka -----	1
San Anselmo -----	2	Sonoma County—	
Mendocino County—		Sebastopol -----	1
Willits -----	1	Stanislaus County -----	1
Modoc County -----	6	Tehama County -----	1
Monterey County—		Tulare County -----	2
Monterey -----	4	Yuba County—	
Orange County—		Marysville -----	1
Huntington Beach -----	1		
Placer County -----	4		
Lincoln -----	1	Total -----	146

Poliomyelitis (Infantile Paralysis).

Distribution of Cases reported during September, 1915.

Counties and cities	Number of new cases reported during month
Alameda County—	
Oakland -----	1
Fresno County -----	1
Los Angeles County—	
Los Angeles -----	4
Riverside County -----	1
Corona -----	1
San Bernardino County—	
Chino -----	2
San Francisco -----	1
Tulare County—	
Exeter -----	1
Total -----	12

Epidemic Cerebrospinal Meningitis.*Distribution of Cases reported during September, 1915.*

Counties and cities	Number of new cases reported
Los Angeles County—	
Los Angeles -----	1
Santa Barbara County—	
Santa Maria -----	1
Total -----	2

Scarlet Fever, Measles, Diphtheria, Dysentery and Other Diseases.*Distribution of Cases reported during September, 1915.*

Disease	Total number of new cases reported during the month in the entire State
Scarlet fever -----	176
Measles -----	31
Diphtheria -----	126
Dysentery -----	1
Chickenpox -----	77
Erysipelas -----	15
Gonococcus infection -----	73
Malaria -----	95
Mumps -----	26
Pneumonia -----	60
Scarlet fever -----	176
Syphilis -----	29
German measles -----	6
Tuberculosis -----	565
Leprosy -----	1
Whooping-cough -----	93
Trachoma -----	8
Tetanus -----	1
Rabies -----	1

REPORT OF THE BUREAU OF VITAL STATISTICS.

GEORGE D. LESLIE, Director.

Marriages of the Widowed and Divorced.

Statistics for California for several years past show that the proportion of bachelors among grooms and of spinsters among brides is diminishing somewhat, while in both instances the proportions widowed and divorced, especially the latter, are growing notably. Although the great bulk of marriages in this State occur between single men and single women, yet the most striking gains are shown by persons of former matrimonial experience, particularly those for whom the previous marriage was ended by divorce rather than death.

The statistics for California in 1914 are presented below, together with comparative data summarized for 1909 to 1913:

	1914		Annual average per cent, 1909 to 1913
	Number	Per cent	
Total marriages -----	31,902	100.0	100.0
Bachelors with-----	26,517	83.1	83.8
Spinsters -----	22,747	71.3	72.8
Widows -----	1,614	5.1	5.2
Divorcees -----	2,156	6.7	5.8
Widowers or divorced men with-----	5,385	16.9	16.2
Spinsters -----	2,514	7.9	7.8
Widows -----	1,565	4.9	4.7
Divorcees -----	1,306	4.1	3.7
Spinsters with-----	25,261	79.2	80.6
Bachelors -----	22,747	71.3	72.8
Widowers -----	1,198	3.8	4.0
Divorced men -----	1,316	4.1	3.8
Widows or divorcees with-----	6,641	20.8	19.4
Bachelors -----	3,770	11.8	11.0
Widowers -----	1,512	4.7	4.6
Divorced men -----	1,359	4.3	3.8

Analysis of the figures indicates that bachelors find divorcees most alluring indeed. The weddings between bachelors and divorcees totaled 2,156 in 1914, or 6.7 per cent of all marriages, while unions between bachelors and widows were only 1,614, or 5.1 per cent of all. Moreover, the tendency for bachelors to marry divorcees seems to be increasing continuously. Thus, the per cent of total marriages which were unions between bachelors and divorcees rose successively in the whole eight years from 1907 to 1914 as follows: 4.6, 4.9, 5.2, 5.8, 5.9, 6.1, 6.2 and 6.7.

In less degree than between bachelors and divorcees, marriages also occur between single women and divorced men somewhat more than between spinsters and widowers. The marriages of single women and divorced men were 1,316, or 4.1 per cent of all, in 1914, as compared with merely 1,198, or 3.8 per cent, for those uniting spinsters with widowers.

On the other hand, where men or women who have been married before wed again with those of like prior experience, the mate chosen is more often a widow or widower bereft by death than a person of either sex left alone by court decree. In 1914 the marriages of widowers or divorced men with widows totaled 1,565, or 4.9 per cent, against merely 1,306, or 4.1 per cent, for such marriages with divorcees. Similarly, the weddings of widows or divorcees with widowers were 1,512, or 4.7 per cent, against only 1,359, or 4.3 per cent, for such unions with divorced men.

Births, Deaths and Marriages for August.*

State Totals and Annual Rates.—The following table shows for California as a whole the birth, death and marriage totals for the current and preceding months in comparison with those for the corresponding months of last year, as well as the annual rates per 1,000 population represented by the totals for the current and preceding months. The rates are based on an estimated midyear population of 2,854,727 for California in 1915, the estimate having been made by the Census Bureau method with slight modifications.

Birth, Death and Marriage Totals, with Annual Rates per 1,000 Population, for Current and Preceding Months, for California: August.

Month	Monthly total		Annual rate per 1,000 population 1915
	1915	1914	
August—			
Births	4,200	4,016	17.3
Deaths	2,997	2,792	12.4
Marriages	2,661	2,541	11.0
July—			
Births	4,132	3,929	17.0
Deaths	3,067	2,907	12.6
Marriages	2,769	2,897	11.4

The birth, death and marriage totals for August were greater in about the same degree in 1915 than in 1914.

Returns for the current month include the first reports under the new registration law, in effect since August 8, by which birth certificates are filed not only with county recorders and the health officers of chartered cities as before, but also with the city (or town) clerks of all other cities and incorporated towns. The new system has produced good results in the filing of birth certificates more promptly than heretofore as well as in the general filling out of the blanks more completely and satisfactorily than has been done in some places in the past.

Improved completeness of returns make the birth total for August about the highest reported for any month since the beginning of registration in 1905. The birth registration for August, 4,200, exceeded the death total, 2,997, by as much as 1,203, or no less than 40.1 per cent.

Length of Residence.—As to deaths, it may be noted that for the 2,997 decedents in August the length of residence in California was

NOTE.—The present report is for the month preceding, but one. This order must be followed hereafter, because of the publication of the Bulletin during the early part of the month, before the tabulation of records for the preceding month is completed.

as follows: Under 1 year, 110, or 3.7 per cent; 1 to 9 years, 571, or 19.0 per cent; 10 years and over, 1,180, or 39.4 per cent; life, 848, or 28.3 per cent; and unknown, 288, or 9.6 per cent.

County Marriage Totals.—The counties showing the highest marriage totals for the month were as follows: Los Angeles, 627; San Francisco, 600; Alameda, 249; Orange, 133; San Diego, 97; Santa Clara, 86; Sacramento and San Joaquin, each 73; Marin, 72; Sonoma, 49; Fresno, 48; Riverside, 46; San Bernardino, 42; Santa Cruz, 35; Kern, 34, and San Mateo, 30. The aggregate for San Francisco and other bay counties was 971, against 760 for Los Angeles and Orange counties together.

County Birth and Death Totals.—The birth and death totals, exclusive of stillbirths, for the month are shown below for the leading counties arranged in decreasing order of birth registration, the indicated excess of births being given also for the sake of comparison.

County	Births	Deaths	Excess of births over deaths
Los Angeles -----	1,011	710	301
San Francisco -----	577	553	24
Alameda -----	395	256	139
Fresno -----	175	94	81
San Diego -----	175	84	91
Santa Clara -----	175	119	56
Sacramento -----	154	96	58
San Joaquin -----	116	93	23
San Bernardino -----	106	90	16
Tulare -----	78	32	46
Kern -----	74	36	38
Stanislaus -----	73	27	46
Riverside -----	72	43	29
Santa Barbara -----	72	26	46
Sonoma -----	70	80	-----

City Birth and Death Totals.—Corresponding figures for the principal cities of the State are as follows:

City	Births	Deaths	Excess of births over deaths
Los Angeles -----	649	421	228
San Francisco -----	577	553	24
Oakland -----	265	149	116
San Diego -----	119	58	61
Sacramento -----	117	80	37
Fresno -----	70	27	43
Stockton -----	64	55	9
Berkeley -----	62	33	29
Pasadena -----	52	37	15
Long Beach -----	50	43	7
San Jose -----	46	36	10
Alameda -----	42	29	13
Bakersfield -----	38	23	15
Santa Barbara -----	32	15	17
Vallejo -----	30	8	22

Cause of Death.—The following table shows the classification of deaths in California for the current month, in comparison with the preceding month:

Deaths Classified by Sex and Age Periods, with Per Cent by Age Periods for California: September.

Cause of death	Deaths: August	Proportion per 1,000	
		August	July
All causes -----	2,997	1,000.0	1,000.0
Typhoid fever -----	36	12.0	5.5
Malarial fever -----	6	2.0	1.0
Measles -----	3	1.0	1.6
Scarlet fever -----	4	1.3	0.7
Whooping-cough -----	12	4.0	4.9
Diphtheria and croup -----	13	4.3	6.2
Influenza -----			1.0
Other epidemic diseases -----	8	2.7	4.2
Tuberculosis of lungs -----	349	116.5	119.3
Tuberculosis of other organs -----	46	15.3	22.2
Cancer -----	239	79.8	76.0
Other general diseases -----	144	48.1	36.8
Meningitis -----	24	8.0	7.8
Other diseases of nervous system -----	230	76.8	89.3
Diseases of circulatory system -----	513	171.2	171.2
Pneumonia and broncho-pneumonia -----	143	47.7	47.9
Other diseases of respiratory system -----	41	13.7	13.4
Diarrhea and enteritis, under 2 years -----	89	29.7	23.5
Diarrhea and enteritis, 2 years and over -----	42	14.0	10.8
Other diseases of digestive system -----	178	59.4	62.3
Bright's disease and nephritis -----	209	69.7	62.9
Childbirth -----	29	9.7	8.8
Diseases of early infancy -----	129	43.0	39.5
Suicide -----	72	24.0	32.6
Other violence -----	325	108.4	102.7
All other causes -----	113	37.7	47.9

In August there were 513 deaths, or 17.1 per cent of all, from diseases of the circulatory system, and 395, or 13.2 per cent, from various forms of tuberculosis, heart disease thus leading tuberculosis greatly.

Other notable causes of death in August were: Violence, 397; diseases of the digestive system, 309; diseases of nervous system, 254; cancer, 239; Bright's disease and nephritis, 209; diseases of respiratory system, 184; and epidemic diseases, 82.

The deaths from epidemic diseases were as follows: Typhoid fever, 36; diphtheria and croup, 13; whooping-cough, 12; malarial fever, 6; and all other epidemic diseases, 15.

The deaths from the three leading epidemic diseases reported for the month were distributed by counties as follows:

Typhoid fever		Diphtheria and croup		Whooping-cough	
Alameda	9	Butte	2	Amador	2
Amador	1	Los Angeles	4	Los Angeles	1
Butte	2	Marin	1	San Bernardino	5
Colusa	3	Mendocino	1	San Mateo	1
Fresno	3	San Diego	1	Shasta	2
Imperial	2	San Francisco	3	Sonoma	1
Kern	1	Santa Clara	1		
Los Angeles	2			Total	12
Marin	1	Total	13		
Placer	1				
Sacramento	1				
San Diego	3				
San Francisco	4				
Santa Clara	1				
Stanislaus	1				
Tehama	1				
Total	36				

Geographic Divisions.—The following table presents data for geographic divisions, including the metropolitan area, or San Francisco and the other bay counties (Alameda, Contra Costa, Marin, and San Mateo), in comparison with the rural counties of Northern and Central California:

Deaths from Main Classes of Diseases, for Geographic Divisions: September.

Geographic division	Deaths: September										
	All causes-----	Epidemic diseases-----	Tuberculosis (all forms)----	Cancer-----	Diseases of nervous system-----	Diseases of circulatory system-----	Diseases of respiratory system-----	Diseases of digestive system-----	Bright's disease and nephritis..	Violence-----	All other causes-----
The State -----	2,997	82	395	239	254	513	184	309	209	397	415
Northern California ---	353	20	40	19	28	61	30	31	24	59	41
Coast counties -----	190	2	20	13	18	31	21	21	17	23	24
Interior counties -----	163	18	20	6	10	30	9	10	7	36	17
Central California ----	1,589	36	199	126	145	298	108	153	110	211	203
San Francisco -----	553	8	66	51	41	131	51	48	41	44	72
Other bay counties----	549	13	47	36	28	69	29	20	23	43	41
Coast counties -----	182	3	22	8	27	39	7	23	12	19	22
Interior counties -----	505	12	64	31	49	59	21	62	34	105	127
Southern California ---	1,055	26	156	94	81	154	46	125	75	127	171
Los Angeles -----	710	11	103	72	46	116	31	80	52	80	119
Other counties -----	345	15	53	22	35	38	15	45	23	47	52
Northern and Central California -----	1,942	56	239	145	173	359	138	184	134	270	244
Metropolitan area ---	902	21	113	87	69	200	80	68	64	87	113
Rural counties -----	1,040	35	126	58	104	159	58	116	70	183	131

Sex, Race and Nativity.—The proportion of the sexes among the 2,997 decedents in August was: Male, 1,846, or 61.6 per cent; and female, 1,151, or 38.4 per cent.

The race distribution of decedents was: White, 2,815, or 93.9 per cent of all; Chinese, 73; negro, 51; Japanese, 45; and Indian, 13.

The 2,815 white decedents were classified by nativity as follows: California, 784, or 27.8 per cent; other states, 1,104, or 39.2 per cent; foreign countries, 849, or 30.2 per cent; and unknown, 78, or 2.8 per cent.

Sex and Age Periods.—The following table shows the age distribution, by numbers and per cents, of deaths classified by sex:

Deaths Classified by Sex and Age Periods, with Per Cent by Age Periods for California: August.

Age period	Deaths			Per cent		
	Total	Male	Female	Total	Male	Female
All ages -----	2,997	1,846	1,151	100.0	100.0	100.0
Under 1 year -----	313	186	127	10.4	10.1	11.0
1 to 4 years -----	104	57	47	3.5	3.1	4.1
5 to 9 years -----	50	29	21	1.7	1.6	1.8
10 to 19 years -----	114	65	49	3.8	3.5	4.3
20 to 29 years -----	289	184	105	9.6	10.0	9.1
30 to 39 years -----	315	215	100	10.5	11.6	8.7
40 to 49 years -----	346	218	128	11.5	11.8	11.1
50 to 59 years -----	377	243	134	12.6	13.2	11.6
60 to 69 years -----	422	253	169	14.1	13.7	14.7
70 years and over -----	667	396	271	22.3	21.4	23.6

This table shows that relatively more females than males died at the age periods under 20 years as well as at 60 years and over, while relatively more males than females died at the age periods of 20 to 59 years.

REPORT OF THE BUREAU OF FOODS AND DRUGS FOR
SEPTEMBER, 1915.

E. J. LEA, Director.

The State Food and Drug Laboratory received, during the month of September, two hundred and fourteen samples of food, drug and miscellaneous materials. One hundred and forty-five of these were official samples taken by inspectors, and sixty-nine were unofficial samples, largely submitted by State institutions. The official samples consisted principally of eggs, meats, beverages, soda fountain syrups and noodles.

Eggs. Eggs labeled "fresh eggs," "fresh ranch eggs," "strictly fresh eggs," etc., have been collected from twenty-two different dealers. In nearly every instance these samples of eggs were found, on examination, to consist of a mixture of storage eggs and other eggs ranging from one week to upwards of ten weeks old. Many of these eggs were stale, and quite a number were actually rotten. Some dealers claim that they can not tell whether or not the eggs they receive are fresh. The proper remedy in such a case would be to buy from reliable wholesalers under a legal guaranty.

Meats. As usual, we have had during this month a number of samples of chopped meats and sausages which contain sulfur dioxid as a preservative. This matter has been repeatedly called to the attention of butchers, and the State Board of Health now feels that severe penalties should be recommended in violations of this character.

Soda Fountain Sirups. Thirty samples of soda fountain sirups were collected this month, and in nearly every case, the samples were found to be artificially colored, or artificially flavored, or both artificially colored and artificially flavored, without the necessary labels or sign to declare these facts to the consumer. In some cases preservatives were also used without declaring their presence.

Noodles. Twenty-five samples of so-called egg noodles were purchased by inspectors and upon analysis it was found that some of these samples contained a satisfactory amount of eggs, several contained a medium quantity, a few contained a small amount and several contained practically no egg at all. Pending the publication of definite standards for this product, we have considered one and one-half eggs to a pound of flour as satisfactory. Several of the manufacturers are using so-called egg powder or egg substitutes in place of eggs in noodles. These substitutes consist, in some cases, of dried eggs and in others, of compounds containing little or no egg, together with artificial color. These materials seldom if ever contain the quantity or quality of nutriment found in fresh eggs, and consequently, their use should be discouraged.

Mineral Water. We have recently received a sample of so-called mineral water, bottled for family use. This water bears an attractive label, which indicates that it is exceptionally pure and healthful. On analysis this water proved to be not only impure, but also unsafe for domestic purposes. On tracing the source of this water supply it was found to come from a well located not in a mineral water district, but in a locality the sanitary surroundings of which were very questionable. Steps have been taken to prevent the sale of this water to the public.

Six of the samples submitted by state institutions, representing deliveries of vinegar, syrups, cheese, butter, eggs and extracts were found to be materially below the specifications. These shipments were returned to the dealers at their expense.

Cases Referred to District Attorneys, September 4, 1915.

Name of article	Offense	Accused dealer	Locality
Prepared mustard --	Mislabeled. Sample contains turmeric not declared on label	Fisher Packing Company----	San Francisco.
Lemon syrup -----	Mislabeled. Coal tar color added which is not declared on label	Kuruklis & Gragia-----	San Francisco.
Strawberry syrup ---	Mislabeled. Coal tar color added which is not declared on label	Kuruklis & Gragia-----	San Francisco.
String beans -----	Adulterated. Contain copper sulphate	H. Cornforth -----	San Francisco.
Peppermint chews --	Adulterated and mislabeled. Contain paraffin which is not declared. Contain an added ingredient-----	San Francisco Candy Factory, J. Prongos, Manager--	Chico.
			San Francisco.

Violations of the Federal Food and Drugs Act.

A service and regulatory announcement of the Bureau of Chemistry announces the imposition of fines for violations of the Food and Drugs Act as follows:

Number	Shipper	Product	Charge	Fine
3942	Cudahy Packing Co., Chicago, Ill.	Eggs	Adulteration and misbranding	\$400 00
3901	Atlantic Macaroni Co., Long Island City, N. Y.	Macaroni	Misbranding	250 00
3945	J. Lindsay Wells (J. Lindsay Wells Commission Co.), Memphis, Tenn.	Sun brand cottonseed meal	Adulteration	100 00
3902	Herbert Harper (Harper X L Manufacturing Co.), New Bedford, Mass.	Lemon pie filling	Adulteration and misbranding	100 00
3903	H. K. Swann, Norfolk, Va.	Clams in the shell	Adulteration	100 00
3929	The Mihalovitch Co., Cincinnati, Ohio	Ginger brandy	Adulteration and misbranding	100 00
3910	Bert Ramsay & Co., El Paso, Texas	Whisky	Misbranding	100 00
3909	Albert F. Lopez, New York, N. Y.	Butter	Adulteration and misbranding	50 00
3916	Spielmann Bros. Co., Chicago, Ill.	Cider vinegar	Adulteration and misbranding	150 00
3923	S. Hirsch Distilling Co., Kansas City, Mo.	Scuppernong wine	Adulteration and misbranding	150 00
3928	Victor Gautier & Co. (Inc.), New York, N. Y.	Peppermint extract and ginger extract	Adulteration and misbranding	50 00
3930	Horton-Cato Manufacturing Co., Detroit, Mich.	Salad dressing	Misbranding	50 00
3935	Schuster Brewing Co., Rochester, Minn.	"Malt and Hop Liquid Food"	Adulteration and misbranding	30 00
3905	McMechen Preserving Co., Wheeling, W. Va.	Jam and jelly	Misbranding	20 00
3907	George W. Lowden, Savannah, Ga.	Oysters	Adulteration and misbranding	10 00
3911	Schuster Brewing Co., Rochester, Minn.	"Malt and Hop Liquid Food"	Adulteration and misbranding	10 00
3918	Hans Jensen Co., Chicago, Ill.	Savigny & Cie. brandy cognac	Misbranding	25 00
3919	Samuel Michael, Brooklyn, N. Y.	Cognac	Adulteration and misbranding	15 00
3920	Hanley & Kinsella Coffee and Spice Co., St. Louis, Mo.	Pepper	Adulteration and misbranding	120 00
3921	Hanley & Kinsella Coffee and Spice Co., St. Louis, Mo.	Ground pepper	Adulteration and misbranding	120 00
3922	Hanley & Kinsella Coffee and Spice Co., St. Louis, Mo.	Pepper	Adulteration and misbranding	120 00
3924	Greenwich Egg Co., New York, N. Y.	Frozen egg product	Adulteration	10 00
3932	Isadore Bear (Sol. Bear & Co.), Wilmington, N. O.	Distilled blackberry brandy	Adulteration and misbranding	10 00
3936	J. Walter McDonald, Washington, D. C.	Tincture of iodine	Adulteration and misbranding	10 00
3940	Bert H. Brockway, Washington, D. C.	Butter	Adulteration and misbranding	25 00
3943	J. H. DeAtley, Washington, D. C.	Butter	Adulteration and misbranding	10 00
3946	J. Frank Lednum, Preston, Md.	Tomato paste	Adulteration and misbranding	10 00
3949	W. Newton Smith, Baltimore, Md.	Cottonseed meal	Misbranding	1 00

¹And costs.

REPORT OF THE BUREAU OF HYGIENIC LABORATORY FOR AUGUST, 1915.

J. C. GEIGER, M.D., Assistant Director.

Is Rabies Under Control in California?

The results shown in the following table are based upon records of this laboratory. The table shows the number of examinations, by months, of brains proven positive for rabies by microscopical examination and animal inoculation:

1912		1913		1914		1915	
January	15	January	22	January	43	January	7
February	18	February	28	February	34	February	7
March	15	March	33	March	31	March	7
April	21	April	25	April	11	April	4
May	30	May	22	May	8	May	7
June	14	June	23	June	13	June	3
July	12	July	22	July	4	July	3
August	19	August	25	August	5	August	0
September	15	September	21	September	8	September	1
October	19	October	38	October	4		
November	30	November	20	November	9		
December	36	December	44	December	13		
Total	244	Total	323	Total	183	Total	39

A glance at the table above will serve to indicate the steady decrease in the number of examinations for the year 1915 up to date. Coincident with this decrease, the demand for the Pasteur treatment of persons bitten by rabid animals grew less. At the State Hygienic Laboratory and its branches the Pasteur treatment was administered to one person in July, two in August and one in September, 1915. With the antirabic virus supplied by the State Hygienic Laboratory to the various city health departments, there was treated in Los Angeles one person in July, two in August and none in September. Virus was supplied to the San Francisco Health Department for two persons in August only. No treatments were supplied to either Sacramento or San Diego. Compare these figures with 10 persons treated in July, 19 in August, and 24 in September of the year 1913, and 19 in July, 10 in August, and 24 in September of the year 1914.

What Are the Reasons for This Decrease?

Rabies is a preventable disease and organized efforts have been made to check its progress in California, but a lack of co-operation and some opposition has retarded the work. When rabies attacks a community where it has not appeared before there are usually a few scattered cases followed later by a sudden sharp epidemic which may involve a large number of cases, depending on the size of the community attacked. The epidemic seems to reach its maximum, then there is an equally sudden fall. The spread of rabies has been steady and continuous up to the latter part of the years 1914 and 1915, as shown in the table.

Judging from the statistics quoted, rabies may now be considered under control in California, and of the contributing factors the following are probably the most important:

First. That the disease is now endemic in the more populous communities of the State, and

Second. The enforcement of muzzling ordinances in the communities attacked, in accordance with the regulations of the California State Board of Health.

While it is probable that rabies is under control, this control can be made complete only by the continuous enforcement of stringent muzzling laws over a long period of time.

Changes in Personnel.

On September 2, 1915, Dr. W. A. Sawyer, Director of the Bureau of the Hygienic Laboratory, was appointed a member of the California State Board of Health by the Governor. At the meeting of the State Board of Health on September 4, 1915, he was chosen Secretary and Executive Officer of the Board. This automatically severed his connection with the Bureau of the Hygienic Laboratory after a continuous meritorious service extending over a number of years. The staff views with pleasure this promotion of Dr. Sawyer, and it desires to express its regrets on his leaving the position as Director of this Bureau. Dr. J. C. Geiger will be in charge temporarily.

It is with pleasure that we announce the appointment of Dr. Frank L. Kelly as Bacteriologist in the Bureau of the Hygienic Laboratory. Dr. Kelly comes to this Bureau on certification by the State Civil Service Commission. Two years of special training in public health makes Dr. Kelly peculiarly well fitted for this position.

Division of Biological Examinations.

Summary of Examinations made in the California State Hygienic Laboratory during the month of September, 1915.

Condition suspected	Positive	Negative	Inconclusive	Total
Main laboratory at Berkeley:				
Anthrax -----	1	6		7
Diphtheria (diagnosis) -----	15	37	4	56
Diphtheria (release) -----	25	35	6	66
Gonococcus infection -----	14	18	1	33
Hookworm -----		1		1
Malaria -----		2	2	4
Rabies -----	1		1	2
Syphilis (Wassermann test) -----	14	63	10	87
Tuberculosis (sputum examinations) -----	7	19		26
Typhoid (Widal test) -----	4	41	1	46
Typhoid (blood culture) -----	1			1
Typhoid (excreta) -----		2		2
Water pollution -----	44	22	4	70
Miscellaneous -----		3		3
				404
Northern branch at Sacramento:				
Diphtheria (diagnosis) -----		14	1	15
Diphtheria (release) -----	4	6		10
Gonococcus infection -----		1		1
Malaria -----		5		5
Tuberculosis (sputum examinations) -----	6	12		18
Typhoid (Widal test) -----	10	16	2	28
Miscellaneous -----		1		1
				78
San Joaquin Valley Branch at Fresno:				
Diphtheria (diagnosis) -----		9		9
Malaria -----		1		1
Tuberculosis (sputum examinations) -----	1	3		4
Typhoid (Widal test) -----		9		9
Miscellaneous -----		3		3
				26
Southern Branch at Los Angeles:				
Diphtheria (diagnosis) -----	18	34	1	53
Diphtheria (release) -----	17	21	4	42
Tuberculosis (sputum examinations) -----	6	7		13
Typhoid (Widal test) -----		23		23
				131
Total number of examinations -----				639

Division of Preventive Therapeutics.

Pasteur Treatment for the Prevention of Rabies by the State Hygienic Laboratory during the month of September, 1915.

	Treatment commenced	Treatment completed
Main laboratory at Berkeley.....	1	2
Northern branch at Sacramento.....	0	0
San Joaquin Valley branch at Fresno.....	0	0
Southern Branch at Los Angeles.....	0	0
Laboratory of Sacramento Board of Health, by deputized bacteriologist.....	0	0
Laboratory of San Francisco Board of Health, by deputized bacteriologist.....	0	2
Laboratory of Los Angeles Board of Health, by deputized bacteriologist.....	0	0
Laboratory of San Diego City Board of Health, by deputized bacteriologist.....	0	0
Laboratory of Letterman General Hospital, Presidio, by deputized bacteriologist.....	0	0
Laboratory of United States Naval Hospital, Mare Island, by deputized bacteriologist.....	0	0
	1	4

Vaccine for the Prevention of Typhoid Fever Issued by the State Hygienic Laboratory during the month of September, 1915.

Number of physicians to whom vaccine was sent..... 24
 Number of complete treatments sent..... 393

Bacteriological Examinations of Water Supplies made during the month of September, 1915.

Location	Positive	Negative	Inconclusive
Alturas.....		1	
Angels Camp.....	1		
Benicia.....		1	
Ceres.....		1	
Elsinore.....		2	
Fallbrook.....		1	
Goffs.....	1		
Hayward.....	6		
Healdsburg.....	6	7	
Lakeport.....	2		
Lanare.....	1		
Lincoln.....	1		
Los Angeles.....	2	1	
Monterey.....	3	1	
Napa.....		2	
Point Lobos.....			1
Raisin City.....		1	
Reedley.....	1		
Richmond.....	1		
Riverton.....	6	1	
San Bernardino.....		1	
San Jose.....	2		
Santa Cruz.....	1		
Santa Rosa.....	1		
Seaside.....	1	1	
Sierra Madre.....	2	1	
Turlock.....	1		
Venice.....	5		3
Totals.....	44	22	4

NOTE.—Positive results mean that the water examined is polluted and is unsafe for drinking. Negative results mean that the water is safe to drink, being free from sewage contamination.

Public Health Instruction.*Participation in Instruction in Public Health during September, 1915.*

Main laboratory at Berkeley:

Bacteriological instruction outfits sent out.....	3
Bacteriological instruction outfits in use.....	19
Lectures or talks by the Assistant Director.....	1

Division of Epidemiological Investigations.*Epidemiological Investigations and other Special Investigations during
September, 1915.*

Main laboratory at Berkeley:

Special investigation by the Director.....	1
An investigation of reported cases of typhoid fever among employees of the State Highway Commission near Napa.	
Special investigations by the Bacteriologist.....	2
Investigation of a complaint regarding breeding of mosquitoes in a pool situated at Orland.	
Investigation of malarial conditions at Orland.	

REPORT OF THE BUREAU OF TUBERCULOSIS FOR OCTOBER, 1915.

MISS E. L. M. TATE, Director.

Data in Tuberculosis Cases Reported During August.

Age—		Length of residence in California—	
Under 5 years	5	Under 1 year	90
5 to 14	21	1 year	20
15 to 24	81	2 years	22
25 to 34	117	3 years	22
35 to 44	97	4 years	25
45 and over	99	5 years	25
Unknown	33	6 years	12
Sex—		7 years	9
Male	320	8 years	17
Female	133	9 years	8
Marital condition—		10 years	22
Single	189	10 to 20 years	72
Married	137	Over 20 years	84
Widowed or divorced	33	Unknown	75
Unknown	94	Number of persons in family—	
Dwelling—		Families of two	40
Detached	160	Families of three	41
Flat	21	Families from 4 to 15	90
Tenement	17	(Average, 5.)	
Boarding	16	Tuberculosis in family—	
Hotel	21	Father	12
Hospital	38	Mother	20
Other	11	Brother	18
Unknown	169	Sister	13
Housing—		Husband	3
Good	110	Wife	2
Fair	111	Children	1
Poor	38	Others	9
Unknown	194	Bacteriological examination—	
Financial condition—		Tubercle bacilli positive	195
Independent	22	Tubercle bacilli negative	33
Wage-earner	173	Not stated	225
Indigent	69	Prognosis—	
Unknown	189	Good	27
Occupational condition—		Bad	51
Good	37	Doubtful	43
Fair	75	Not stated	332
Poor	38	Type—	
Unknown	303	Tuberculosis of lungs	433
Nativity—		Tuberculosis of other organs	47
California	66	Duplicated	27
Elsewhere in United States	168	Totals—	
Foreign	158	Cases reported with data	453
Unknown	61	Reported at time of death or later	37
Race or color—		Total living cases	416
White	392		
Negro	7		
Indian	1		
Chinese	3		
Japanese	4		
Unknown	46		

	Deaths from pulmonary tubercu- losis August	All cases of tuber- culosis reported in August		Deaths from pulmonary tubercu- losis August	All cases of tuber- culosis reported in August
Alameda -----	30	25	Orange -----	10	3
Alpine -----			Placer -----	7	12
Amador -----	3		Plumas -----	1	
Butte -----	2		Riverside -----	8	9
Calaveras -----	1		Sacramento -----	12	8
Colusa -----			San Benito -----	1	
Contra Costa -----	2		San Bernardino -----	13	10
Del Norte -----			San Diego -----	10	98
El Dorado -----			San Francisco -----	53	80
Fresno -----	14		San Joaquin -----	13	13
Glenn -----			San Luis Obispo -----	3	
Humboldt -----	2		San Mateo -----	5	2
Imperial -----			Santa Barbara -----	5	1
Inyo -----			Santa Cruz -----	3	1
Kern -----	8	6	Santa Clara -----	12	6
Kings -----	1		Shasta -----	1	
Lake -----			Sierra -----	1	1
Lassen -----	1		Siskiyou -----		
Los Angeles (city) -----	61	150	Solano -----		
Rest of county -----	28	12	Sonoma -----	11	4
Madera -----	1		Stanislaus -----	1	3
Marin -----	6		Sutter -----		
Mariposa -----			Tehama -----	2	
Mendocino -----	1		Trinity -----		
Merced -----	2	1	Tulare -----	3	
Modoc -----			Tuolumne -----		
Mono -----			Ventura -----	4	1
Monterey -----			Yolo -----	1	
Napa -----	3	1	Yuba -----		
Nevada -----	3				

REPORT OF THE BUREAU OF SANITARY ENGINEERING FOR SEPTEMBER, 1915.

By C. G. GILLESPIE, C.E., Director.

The personal investigation of long standing complaints, as well as urgent requests for advice in matters pertaining to sewage disposal, has been continued during September. More attention has been paid to investigations into conditions in the smaller, more isolated communities, in order that considerable time may be provided for future investigations of wider scope in other localities.

The Director's investigations covered territory in the San Joaquin Valley, in the district surrounding Los Angeles and along the coast.

Specific investigations made in the present month may be grouped as follows:

Water Supplies.

Los Banos. The citizens of this town have for many years been endeavoring to induce the local water company to purify the unpotable and polluted canal supply. Works aiming at complete redemption for domestic purposes have been outlined by this Bureau.

Sewage Disposal.

King City. Among California towns most lacking in things hygienic, King City is groping toward the light and her leading citizens are endeavoring earnestly to implant in the great majority of the inhabitants, who up to this time have opposed every suggestion along this line, a realization of the civic and hygienic impossibility of the present cesspool disposal of wastes. One of the big obstacles is the difficulty of permanent and satisfactory disposal. Some field examination, to be later continued, looking into requirements and possible sites for disposal works has been made by this Bureau.

Los Gatos. The sewage disposal plant of Los Gatos, representing the most up-to-date sewage works in this State, has been receiving the careful attention of this Bureau in an endeavor to "tune" it up to produce the results of which it is capable.

College Park. The sewage disposal problem of College Park, which up to the present time has been one of the most troublesome problems which this Bureau has had to face, is in a fair way towards satisfactory solution. The Sanitary Board of the city have decided to call an election to issue bonds for connection of their system with that of San Jose.

Reedley. The clarification of the sewage in the Imhoff tanks is admirably effective. Sludge digestion is so thorough that withdrawals can not be detected by the resulting odors. The final treatment in a so-called sprinkling filter is as ineffective as is indicated.

Miscellaneous. The Imhoff tanks of Pasadena, Fowler and Hanford were inspected. In spite of extreme lack of ordinary operating attention these tanks were giving surprisingly well clarified effluents. A heavy withdrawal of sludge had been made a few days previously from

the Pasadena tanks. No odors whatever could be detected. It is gratifying to see this type of clarification works producing such satisfactory results with so little operating attention.

Stream Pollution.

Kings River. Preliminary steps toward a comprehensive study of the pollution of Kings River from Reedley and above, to its junction with the San Joaquin River, have been taken in connection with a determination of measures corrective of possible contamination of this water so naturally brilliant and clear that it is used promiscuously for drinking purposes.

Cannery Wastes.

Initial steps have been taken in canvassing the methods of disposal of wastes used in canneries, distilleries and wineries. It is apparent that much scientific study can be well devoted to this knotty problem.

REPORT OF THE BUREAU OF REGISTRATION OF NURSES FOR SEPTEMBER, 1915.

ANNA C. JAMMÉ, R.N., Director.

The State Board of Health held the third examination for certificate as registered nurse in San Francisco, October 12th and 13th, in the amphitheatre of the University of California Medical School. One hundred and thirty-eight nurses applied to take the examination. These applicants are all recent graduates of the training schools of California, with the exception of nine who are graduates of schools not located in this State; four of the latter held certificates of other states where the requirements of the law are not equivalent to the requirements of the law of California.

This is the largest number of applicants for examination since the establishment of the bureau. At the second examination held in Los Angeles 87 were present and at the first, held in Sacramento, 46 were present.

Records of the bureau show that since December 1, 1914, three hundred and one nurses have been graduated in the State.

Following are the questions:

Obstetrical Nursing.

1. Name the bones of the pelvis.
2. Give the name and function of the female organs of generation.
3. Describe the placenta; the umbilical cord.
4. Define: Ovulation; conception; puerperium; lochia; colostrum.
5. What instructions would you give the prospective mother during the last three months of pregnancy?
6. How will you prepare your patient for labor?
7. How would you care for a premature baby?
8. How will you prepare for perineorrhaphy? What instruments are necessary?
9. What is mastitis? Give cause and treatment.
10. Name two complications due to infection that may occur to the new-born. State cause and prevention.

Contagious Diseases.

1. Define the following terms: (a) Period of incubation; (b) Onset of disease; (c) Resolution; (d) Exacerbation of disease; (e) Exanthemata.
2. What is the difference between an infectious disease and a contagious disease? Give an example of each.
3. What abnormal conditions frequently follow scarlet fever; measles; diphtheria?
4. Tell in detail how you would care for a child suffering with scarlet fever.
5. What precautions should a nurse take to prevent the spread to other members of the family when caring for a case of measles?
6. Describe the difference in the typical rash of scarlet fever and measles.

7. Describe the typical rash of chicken pox; of small-pox.
8. What is meant by a "carrier"?
9. What is the danger from "carriers"?
10. What is: scabies; impetigo; trachoma? Describe each briefly.

Materia Medica.

1. Give the table of apothecaries weight.
2. Give the equivalent in the metric system of: 1 quart; 1 dram; 1 pound.
3. Give the symbols of the following: ounce; dram; immediately; when necessary; after eating.
4. How would you read the following:

Rx. Menthol	
Camphor aa	grs. iv.
Olei Eucalypti	m iv.
Phenolis	m v.
Vaseline q.s.	ad 1 ounce
M. & Sig.	
Apply t.i.d.	

5. Through what channels are drugs absorbed into the system.
6. What precautions do you observe in giving a drug in order not to make a mistake?
7. Mercury. Give physiological action. Name two preparations. Symptoms of poisoning. Antidote.
8. Belladonna. Give physiological action. Name two preparations. Symptoms of poisoning. Antidote.
9. Give an example of each of the following: anodyne; antipyretic; cardiac stimulant; emetic; diuretic.
10. You have tablets 1/30 grain only and you are ordered to give 1/10 grain. What do you do?

Hygiene.

1. What constitutes pure air? Impure air?
2. What is the effect of pure air; the effect of impure air on the human organism?
3. Name two diseases carried by drinking water.
4. Give the difference between distilled water and sterilized water.
5. Of what importance are the State pure food laws?
6. What disease is caused by using putrid food?
7. Name important points in considering the personal hygiene of the nurse.
8. Name five points to be considered in household hygiene.
9. Name three occupational diseases and their cause.
10. What do you consider the three most important considerations in school hygiene?

Dietetics.

1. What is the value of each of the following in the process of nutrition: (a) water; (b) salt; (c) fats; (d) carbohydrates; (e) proteids.
2. What constitutes a mixed diet?
3. Give the difference between cows' milk and mothers' milk.
4. How do you pasteurize milk?

5. Name three important points to be observed in bread making.
6. What are the main points of difference in roasting or broiling and in boiling meat?
7. How would you prepare a dish of boiled rice?
8. How would you make a cream soup?
9. In what diseases should the following be avoided: (a) meat; (b) sugar, starch; (c) tea and coffee; (d) fruit.
10. Name five important points in serving food to the sick.

Urinalysis.

1. Give the function of the kidney.
2. Give the function of the ureter.
3. Give the function of the bladder.
4. What would you consider three essential points to be observed in order that a correct examination of urine may be made?
5. How would you examine a specimen of urine in order to ascertain if albumin is present?
6. To what may the following appearance of urine be due: (a) pale color; (b) dark color; (c) red sediment; (d) heavy white sediment; (e) smoky urine.
7. What do you understand by specific gravity of urine?
8. Name a common cause of cystitis. How would you avoid it?
9. Name the prominent symptoms of cystitis.
10. How would you treat a patient during suppression of urine?

Surgical Nursing.

1. Define: sepsis; antisepsis.
2. What micro-organisms are the common source of surgical infection?
3. State in detail the methods you would use in the home in the case of an operation to prepare the following: (a) instruments; (b) linen.
4. State in detail how you would prepare for curettage in a private home.
5. What are the symptoms and how would you treat shock following operation?
6. What do you understand by hemorrhage? Name four varieties.
7. What is a compound fracture of the tibia? How would you treat it for twenty-four hours in the absence of a physician?
8. What immediate treatment would you give a burn of the second degree.
9. Outline the nursing care of exophthalmic goitre following operation.
10. Define: gastrotomy; cholecystectomy; trachelorrhaphy; pyosalpinx; hydronephrosis.

Genito-Urinary Diseases. Male Nurses.

1. Through what organs does elimination of waste substances in the body take place?
2. What do you understand by: (a) acute nephritis; (b) chronic nephritis.
3. Outline the diet for a case of acute nephritis.
4. Describe the prostate gland.

5. What general care would you give a patient after an operation for supra-pubic prostatectomy?
6. Give in detail your method of catheterization.
7. Give in detail your method of administering a hot pack.
8. Define: epididymectomy; inguinal hernia; varicocele.
9. Describe the care of a patient after the operation for circumcision.
10. How would you recognize the retention of urine?

Bacteriology.

1. Define: inflammation; suppuration; septicemia; pyemia.
2. How are the following diseases transmitted; name the organisms concerned in each: tetanus; diphtheria; influenza.
3. What do you mean by natural immunity? By acquired immunity?
4. Name diseases carried by insects, as mosquitoes, flies and fleas.
5. By what avenues do bacteria commonly gain entrance into the body?
6. Give difference between aerobic and anaerobic bacteria and an example of each.
7. How do you disinfect the following: linen; sputum; feces.
8. What do you regard as most important in disinfecting your hands?
9. Name five chemical disinfectants and give the strength and use of each.
10. What are the dangers of dust?

Anatomy and Physiology.

1. Name the bones that enter into the formation of the hip joint.
2. Locate and give articulation of: humerus; fibula.
3. Name a voluntary muscle, give location, origin and insertion.
4. Name the muscles controlling the movements of the eye.
5. What is the function of the biceps muscle?
6. What organs are concerned in the digestion of a glass of milk?
7. In what part of the alimentary canal does absorption of nutritive principles take place and by what process?
8. Give the location of: the tri-cuspid valve; the brachial artery; the popliteal artery.
9. Where does the exchange of oxygen and carbon-dioxide take place?
10. What is your understanding of the portal circulation?

Ethics.

1. What do you understand by nursing ethics?
2. What fundamental rule governs a nurse in her relation to her patient?
3. What fundamental rule governs a nurse in her relation to a physician?
4. Name three qualifications you would consider essential in nursing children.
5. What would be your mode of procedure if a patient appeared dissatisfied with your work?
6. What would you consider your duty when called to a case of curettage and found it to be criminal abortion?
7. Write a brief discussion on the nurse's uniform, including a statement when it should be worn and when not worn.

8. Section 9 of the Nurse Registration Act reads as follows:

SEC. 9. The board shall have the power to revoke any certificate of registration for dishonesty, intemperance, immorality, unprofessional conduct, or any habit rendering a nurse unfit or unsafe to care for the sick, after a full and fair investigation of the charges preferred against the accused.

What habit, or habits, would you consider may render a nurse "unfit or unsafe" to care for the sick other than mentioned in above section?

9. What do you consider essential to be done in order that a nurse may maintain proficiency in her profession?
10. State some prominent work done by: (a) Pasteur; (b) Koch; (c) Semmelweis; (d) Florence Nightingale; (e) Clara Barton.

Medical Nursing.

1. What are the points to be observed in bed making?
2. Give in detail how you would prepare a bed-patient for the night.
3. Describe the administration of a cold sponge.
4. Describe the administration of a turpentine stupe.
5. What details would you observe in preparing a bed-patient for a chest examination?
6. What are subjective symptoms? Objective symptoms? Give an example of each.
7. What is syncope? How would you treat it?
8. What would be your treatment of a chill; include report you would make to the physician.
9. State general care of a paralyzed patient and precautions you would take.
10. Define: anemic; coma; tympanites; embolism; thrombosis.

Children's Diseases.

1. What general instructions would you give a mother who is nursing an infant six weeks old?
2. What symptoms would indicate that the child is not doing well?
3. What would you do in a case of acute intestinal colic?
4. What would you do in a case of convulsions?
5. Outline the diet for a child of three years.
6. What are adenoids? What are the symptoms?
7. What is Pott's disease? Give nursing care.
8. How would you care for a case of marasmus?
9. How would you give a steam inhalation in a case of croup?
10. How would you collect a specimen of urine from a child of one year? State in the case of both male and female.

Although the country has a long road to travel before reaching the goal of perfect sanitation, yet during the last decade it has traveled a long way on that road. The nation should be proud of * * * the work done by many civic organizations, many an editor in his chair, many a lawyer struggling for better sanitary laws, many a family physician doing self-sacrificing work that humanity never dreams of, and many an engineer working out on a large scale what the laboratory student has learned from his test tubes and microscopes. And the United States should be proud of her citizens, who, in ever increasing numbers and in many states, are taking an intelligent interest in the care of their own premises, in the sanitation of their city, and in the universally important subjects of health and cleanliness.—GEORGE C. WHIPPLE.

★ ★ ★

Disease has done more in the pages of our history than all of the wars and all of the great men that ever lived. The decline of Greece was only brought about by malaria after all other nations had yielded to the Grecian rule. Malaria killed countless thousands of the Athenian soldiers and citizenry and fairly rotted the Grecian civilization. Was it the Goths that caused the downfall of Rome? No, it was the diseases of typhoid, malaria, typhus and sexual infections. These may be truly blamed for the fall of the greatest power on earth. Romans in the state of health that was theirs before Christ, could have remained supreme indefinitely, but for their sins they were punished with disease, and disease it was that tore down the civilization that took centuries to build. Again, the Teutons and Goths, savages, but men, assumed the patronage of the world. But they were not long to hold sway. Disease infected their ranks and for three centuries civilization hung by a thread. These were the dark ages, the ages of decline of mankind. Are we to have another period such as the dark ages? No, we are about to enter upon a new era, and the era of perfect man.—VICTOR C. VAUGHAN, M. D.

